



National Therapeutic Indicators 2018



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Foreword

Medicines management continues to develop as an expert field in NHS Scotland, consistently delivering improvements to patient safety, effective care and efficient spending. National Therapeutic Indicators (NTIs) support this work, using prescription data to provide a measure of prescribing activity in specified therapeutic areas and a comparison across Boards and GP practices. Since 2012-13, the NTIs have been presented as a snapshot, however this year three year trends are also provided.

To ensure as much consistency as possible, the relevant NTIs are included in the national prescribing strategy documents for [Polypharmacy](#), [Diabetes](#), [Respiratory Medicine](#) and [Chronic Pain](#). They further complement the national Realistic Medicine agenda and the Scottish Patient Safety Programme for Primary Care. They will soon be further supported by measures focussing on secondary care prescribing.

National prescribing indicators have been developed for 6 years, initially as part of the Scottish Government Quality and Efficiency Programme and more recently as part of the Effective Prescribing and Therapeutics Branch. These indicators cover core therapeutic areas including proton pump inhibitors, inhalers, hypnotics/anxiolytics, analgesics, antibiotics, antidiabetic drugs, non-steroidal anti-inflammatory drugs and antimicrobial wound management products.

The availability of patient-level data from the national Prescription Information System provides an opportunity to develop measures that directly address patient safety issues, particularly the prescribing of drug combinations that are known to increase the risk of adverse drug reactions. In the previous two iterations of this document, these indicators were designated Additional Prescribing Measures but, as they are now widely accepted and used by NHS colleagues across Scotland, they are fully incorporated within this suite of NTIs.

The NTIs for 2018-19 were developed at the end of 2017 by a reference group of representatives from NHS Boards across Scotland and experts in specific topics (controlled drugs, patient safety). They reviewed prescribing trends including the changes in prescribing patterns that could be attributed to existing NTIs and APMs. They also considered the national prescribing strategy documents mentioned previously and prescribing indicators used in other UK countries.

The NTI for total antibiotic prescribing is used by Scottish Governments Directorates as a HEAT target in collaboration with the Scottish Antimicrobial Prescribing Group (SAPG).



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August 2018

Background

This report details the NTIs developed for the 2018-19 financial year providing data on the variation in prescribing of GP practices within each NHS Board and across Scotland for the period October to December 2017.

NHS staff with access to the national Prescription Information Systems (PIS or PRISMs) can run reports from the NHS NSS [Business Intelligence Reporting platform](#) to get GP practice data. Currently these include analysis of GP practices within selected NHS Boards and Health and Social Care Partnerships. When details of GP Practice Clusters are available in PIS/PRISMS then the reports will be updated.

Notable developments include:

- Three year trends are now provided for each measure, showing the direction of travel for Boards and NHS Scotland. Data tables have been reinstated following feedback.
- An indicator looking at prescribing of valproate to women of child-bearing age, in support of information provided by MHRA.
- An indicator identifying patients prescribed 3 or more classes of antidiabetic agents, in support of the national prescribing strategy document for diabetes.
- Indicators identifying patients prescribed more than 14 inhaled corticosteroid inhalers per annum or prescribed mucolytics long-term to support the national prescribing strategy document for respiratory medicine.
- Further newly developed indicators focus on specific patient safety issues:
 - Risk of bone marrow suppression
 - Risk of falls, fractures and delirium
- A description is now provided for each indicator, commenting on the scale of variation and some key interpretation of the charts.

Acknowledgements

The National Therapeutic Indicators (NTIs) are developed and maintained by the Effective Prescribing and Therapeutics Branch, Scottish Government. Mr Sean MacBride-Stewart provides pharmaceutical leadership, Dr Simon B Hurding provides clinical leadership and Mr Paul Paxton provides data analysis expertise.

Consensus is provided by working with the NTI Reference Group. In addition we wish to acknowledge the support of the Claire Thomas (NHS Wales), the ISD Prescribing Team, the Scottish Practice Pharmacy & Prescribing Advisors Association, the National Acute Pharmacists Group, the Scottish Antimicrobial Prescribing Group, the National Chronic Pain Prescribing Strategy Group, the Improvement Hub, the Scottish Patient Safety Programme, the All Wales Medicines Strategy Group and the Controlled Drugs Accountable Officer Network Scotland.

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

The NTI reference group for 2018-2019 was made up of:

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Ruth Edwards, NHS GGC	Kenneth Halliday, NHS Tayside
Heather Harrison, NHS GGC	Findlay Hickey, NHS Highland
Simon Hurding, Therapeutics Branch	Gordon Loughran, NHS Dumfries and Galloway
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David Maxwell, HIS	Stephen McBurney, NHS Lothian
Jennifer McCaig, NHS Ayrshire and Arran	Tony McDavitt, NHS Shetland
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Paul Paxton, ISD	Margaret Ryan, NHS GGC
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Anne Thomson, NHS GGC	Iain Watt, NHS Forth Valley

Pills Image courtesy of jk1991 at FreeDigitalPhotos.net

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Gabapentinoids: pregabalin and gabapentin DDDs per 1,000 List Size per day

Indicator Group CNS - analgesic **Drug Group** Analgesics (gabapentinoids)

[From: [Quality Prescribing for Chronic Pain – a guide for improvement 2018-2021](#)]

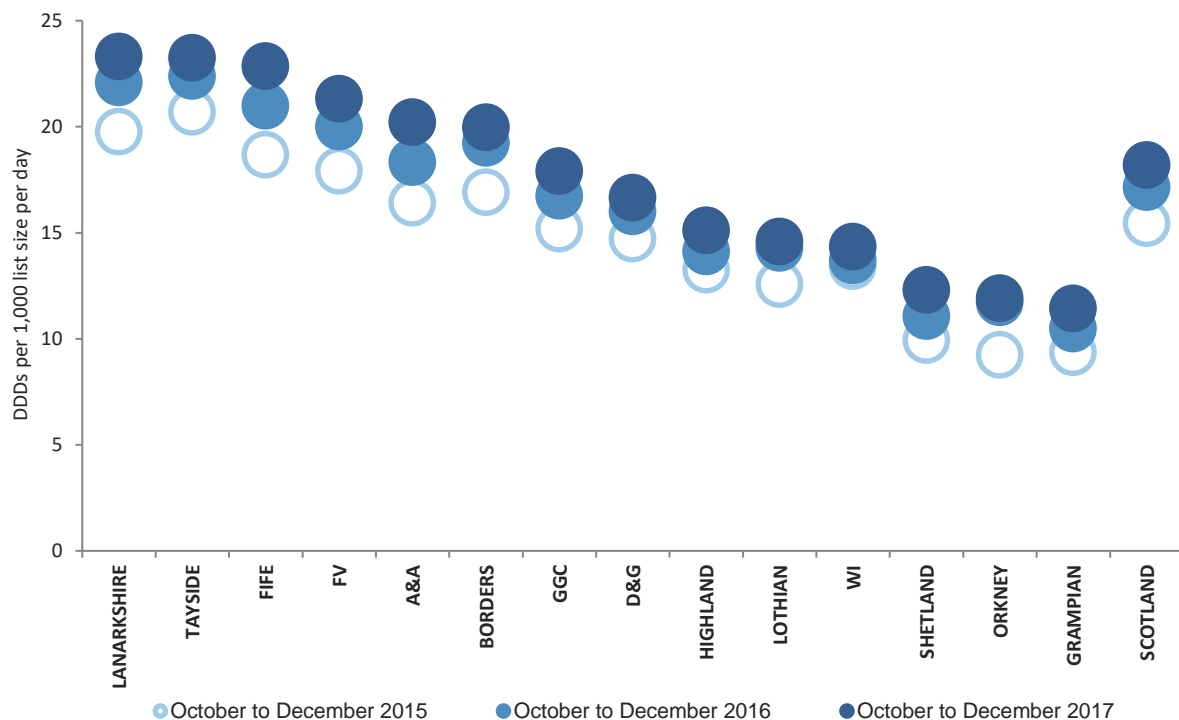
There is increasing evidence that many analgesics, including opioids, gabapentin and pregabalin, have the potential for harm and abuse. Cases of dependency have been described and there are reports of an increasing street value and risk of drug misuse.

Evidence also highlights that over recent years there has been a significant increase in the number of drug related deaths where both gabapentin and pregabalin have been involved.

Prescribers should aim to reduce gabapentinoids prescribing where possible without detriment to patient relief or quality of life.

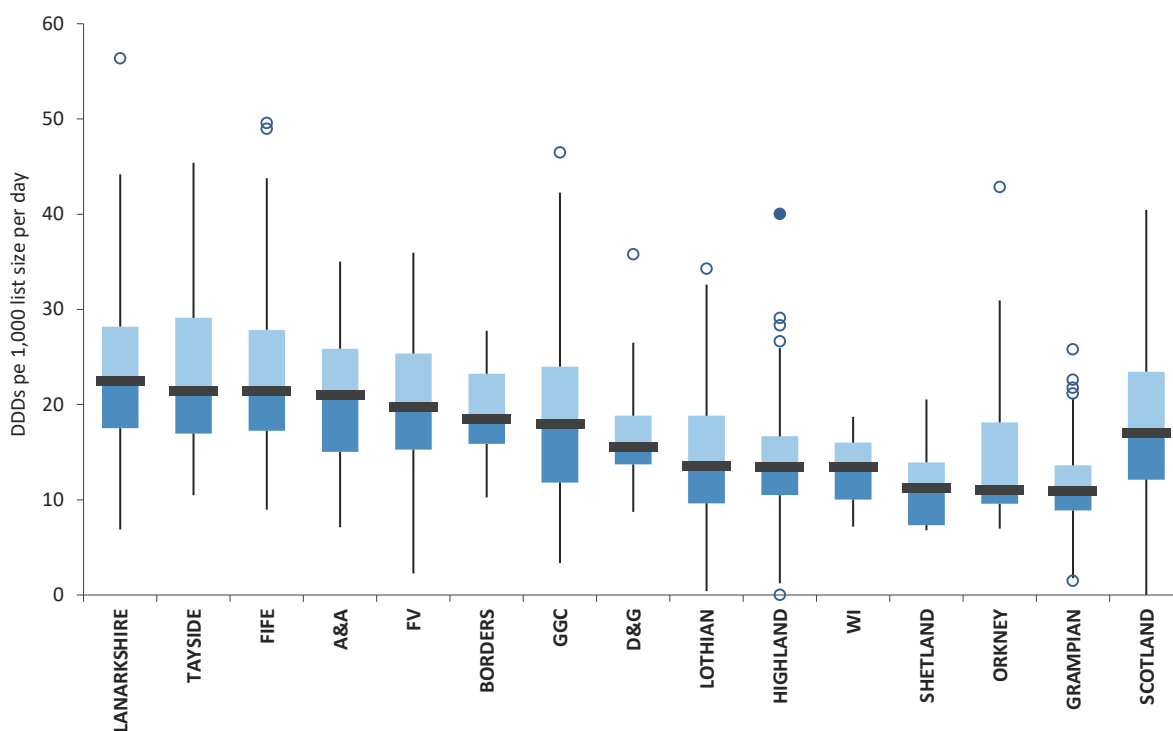
The analysis shows that gabapentinoid prescribing has increased year on year for the last three years. On average there is a two-fold variation in prescribing between the NHS Boards (11.4 DDDs per 1,000 list size per day in NHS Grampian compared to 23.3 in NHS Lanarkshire). The NHS Boards with the greatest variation between their GP Practices are NHS GGC, NHS Tayside; they all have interquartile ranges greater than 12 DDDs per 1,000 list size per day. There are 17 GP practices whose prescribing rate of gabapentinoids is identified as outlying within their NHS Board area.

Gabapentinoids: pregabalin and gabapentin



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Gabapentinoids: pregabalin and gabapentin



NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	7.12	15.02	20.98	25.87	35.02
NHS BORDERS	10.25	15.87	18.51	23.24	27.75
NHS DUMFRIES & GALLOWAY	8.73	13.71	15.59	18.83	35.79
NHS FIFE	8.97	17.25	21.40	27.86	49.58
NHS FORTH VALLEY	2.26	15.27	19.78	25.35	35.96
NHS GRAMPIAN	1.49	8.88	10.81	13.61	25.80
NHS GREATER GLASGOW & CLYDE	3.35	11.81	18.01	23.99	46.49
NHS HIGHLAND	0.00	10.49	13.48	16.67	40.01
NHS LANARKSHIRE	6.88	17.52	22.44	28.18	56.35
NHS LOTHIAN	0.41	9.63	13.57	18.82	34.28
NHS ORKNEY	6.97	9.58	11.03	18.13	42.84
NHS SHETLAND	6.80	7.34	11.21	13.94	20.54
NHS TAYSIDE	10.48	16.96	21.42	29.11	45.39
NHS WESTERN ISLES	7.18	10.02	13.44	16.00	18.72
SCOTLAND		12.14	17.04	23.45	

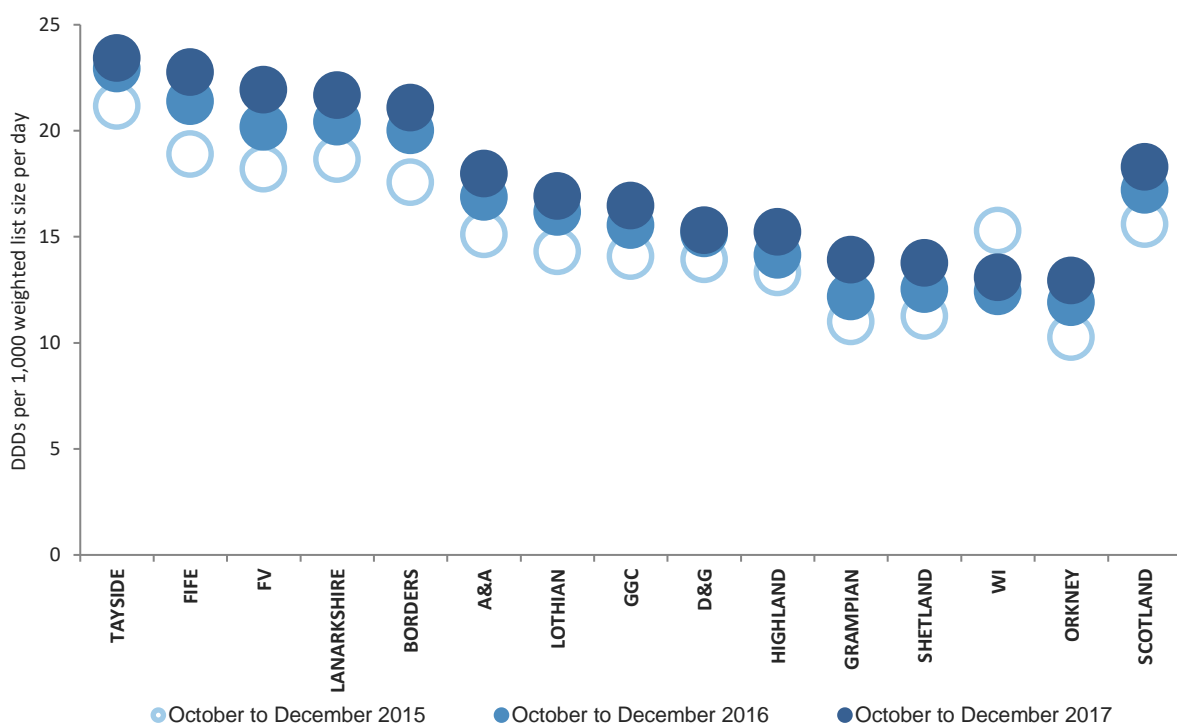
Gabapentinoids: pregabalin and gabapentin DDDs per 1,000 Weighted List Size per day

Indicator Group CNS - analgesic **Drug Group** Analgesics (gabapentinoids)

The previous measure made available using the population figures that have been weighted to account for demographic variation. These weighted populations are available within the PRISMS and are based on the GP practice component of the NRAC formula (<http://www.isdscotland.org/Health-Topics/Finance/Resource-Allocation-Formula/>).

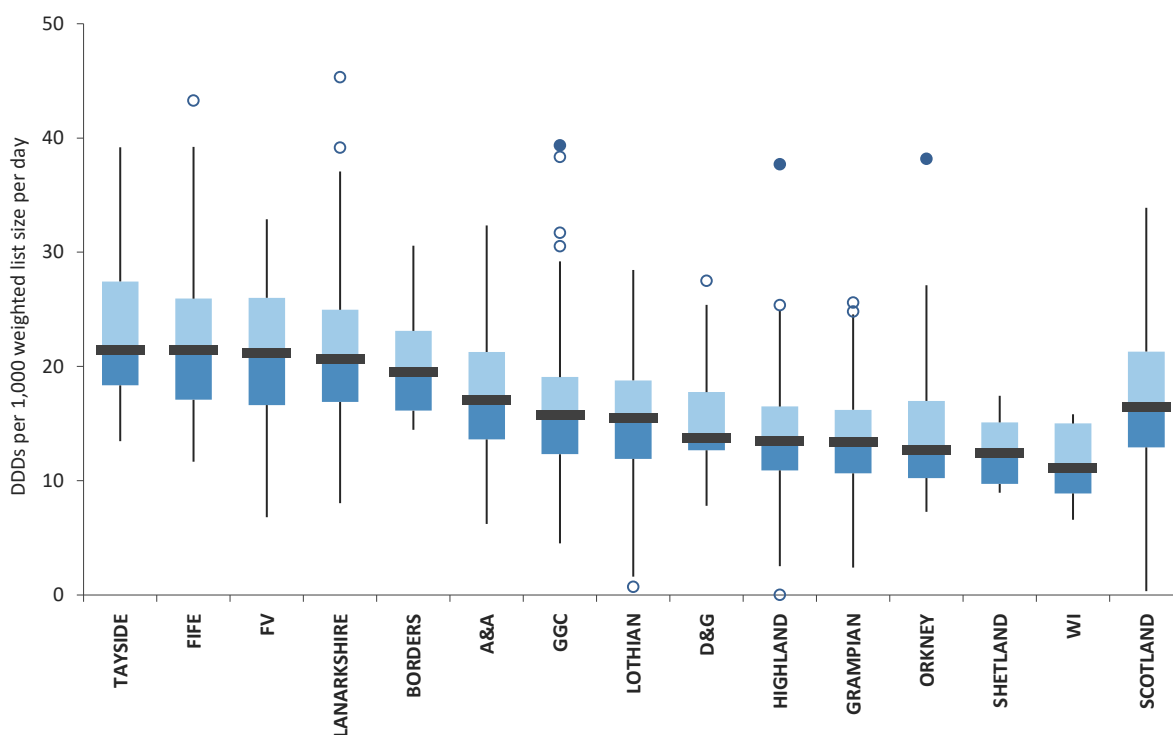
The analysis shows that gabapentinoid prescribing has increased year on year for the last three years in all NHS Boards except NHS Western Isles. On average there is a two-fold variation in prescribing between the NHS Boards (12.9 DDDs per 1,000 weighted list size per day in NHS Orkney compared to 23.4 in NHS Tayside). The NHS Boards with the greatest variation between their GP Practices are NHS Forth Valley, NHS Tayside, NHS Fife; they all have interquartile ranges greater than 8.5 DDDs per 1,000 weighted list size per day. There are 15 GP practices whose prescribing rate of gabapentinoids is identified as outlying within their NHS Board area.

Gabapentinoids: pregabalin and gabapentin



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Gabapentinoids: pregabalin and gabapentin



NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS Ayrshire & Arran	6.22	13.62	17.08	21.27	32.35
NHS Borders	14.46	16.13	19.48	23.12	30.57
NHS Dumfries & Galloway	7.81	12.67	13.75	17.76	27.50
NHS Fife	11.67	17.08	21.44	25.94	43.26
NHS Forth Valley	6.81	16.63	21.16	26.01	32.89
NHS Grampian	2.40	10.65	13.41	16.21	25.59
NHS Greater Glasgow & Clyde	4.52	12.32	15.79	19.07	39.34
NHS Highland	0.00	10.91	13.44	16.50	37.68
NHS Lanarkshire	8.04	16.89	20.68	24.96	45.31
NHS Lothian	0.70	11.92	15.52	18.79	28.45
NHS Orkney	7.28	10.24	12.69	16.99	38.16
NHS Shetland	8.95	9.72	12.45	15.11	17.44
NHS Tayside	13.47	18.35	21.47	27.45	39.19
NHS Western Isles	6.59	8.89	11.12	15.01	15.82
Scotland		12.92	16.46	21.31	

Opioid analgesics: strong opioids (including tramadol preparations) DDDs per 1,000 LS per day

Indicator Group CNS - analgesic **Drug Group** Analgesics (opioids)

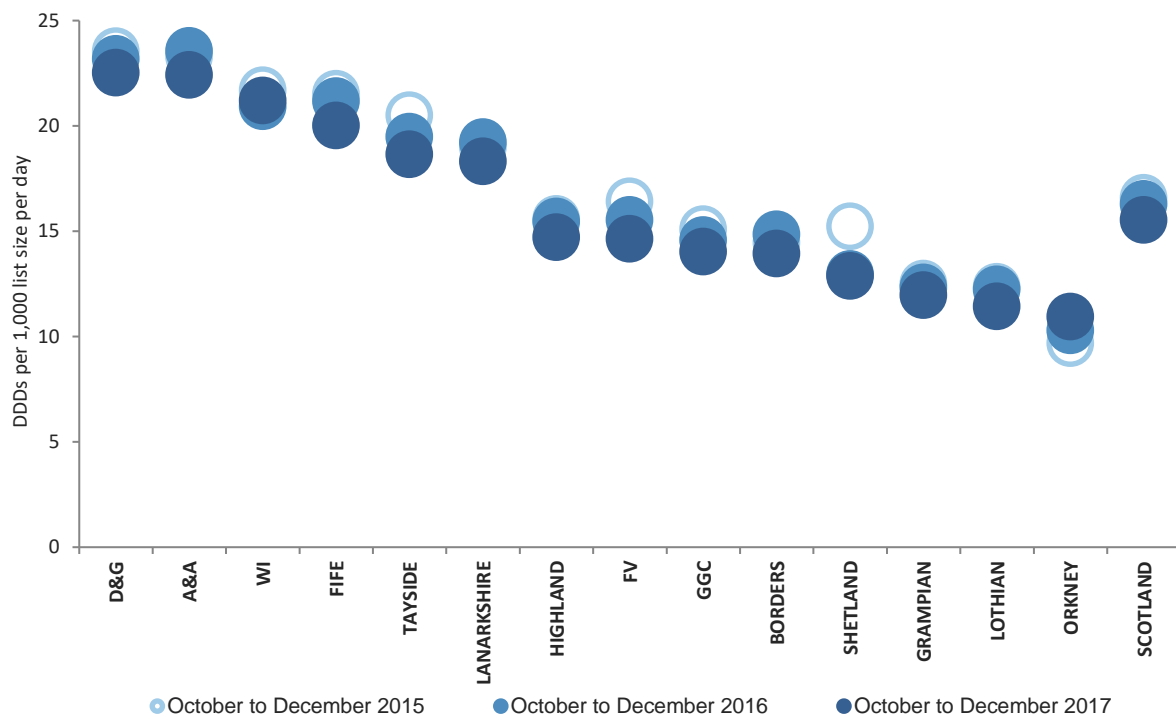
[From: [Quality Prescribing for Chronic Pain – a guide for improvement 2018-2021](#)]

Not only is there a lack of evidence for efficacy of opioids in the long term treatment of chronic pain there are also considerable safety concerns, such as increased risk of overdose, fractures, abuse or dependence; this should be explicitly discussed with patients. A recent Cochrane review found an increased risk of adverse events with opioids vs placebo and vs non-opioid active comparator. There was also an increased risk of serious adverse events vs placebo. The authors noted that “based on the adverse events identified, clinically relevant benefit would need to be clearly demonstrated before long-term use could be considered in people with chronic non-cancer pain in clinical practice”.

'Starting low' and **'Going slow'** is a good strategy for newly prescribed opioids to help minimise side effects.

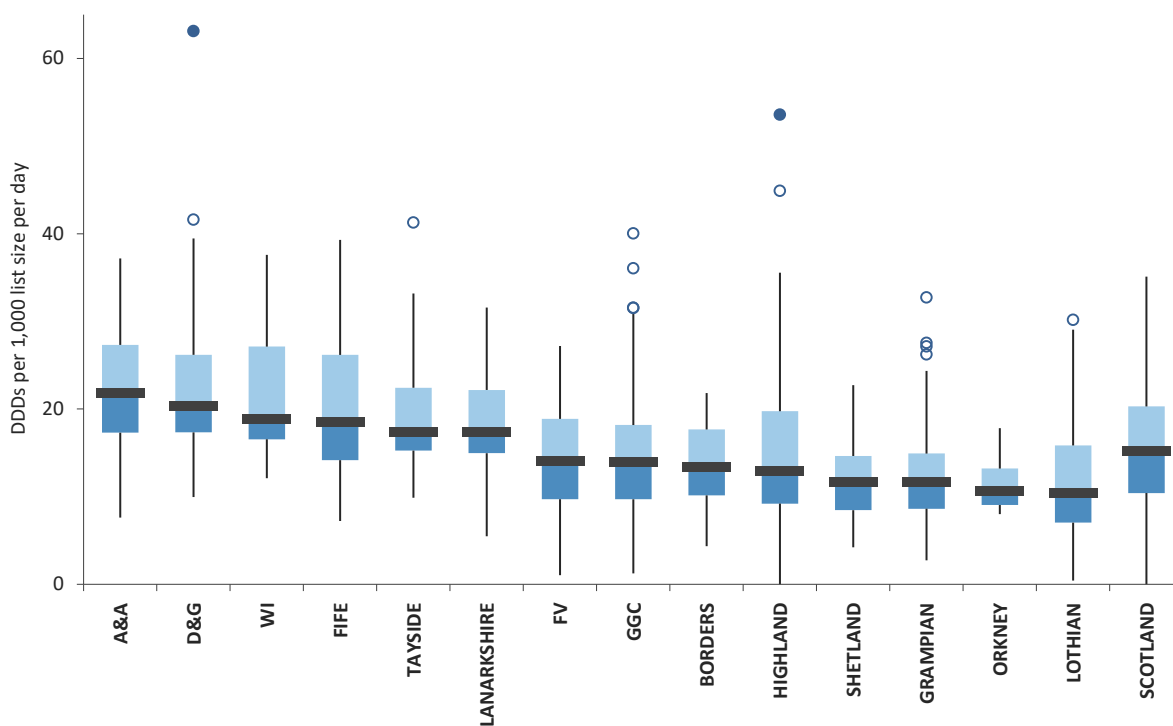
The analysis shows that strong opioid prescribing has decreased year on year for the last three years across Scotland with differences between NHS Boards. On average there is a two-fold variation in prescribing between the NHS Boards (10.9 DDDs per 1,000 list size per day in NHS Orkney compared to 22.5 in NHS Dumfries and Galloway). The NHS Boards with the greatest variation between their GP Practices are NHS Fife, NHS Western Isles, NHS Highland, NHS Ayrshire & Arran; they all have interquartile ranges greater than 10 DDDs per 1,000 list size per day. There are 14 GP practices whose prescribing rate of strong opioids is identified as outlying within their NHS Board area.

Strong Opioids (including tramadol preparations) - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS Ayrshire & Arran	7.61	17.30	21.85	27.32	37.18
NHS Borders	4.35	10.15	13.37	17.67	21.82
NHS Dumfries & Galloway	9.96	17.33	20.31	26.19	63.10
NHS Fife	7.22	14.16	18.51	26.17	39.30
NHS Forth Valley	1.04	9.71	14.10	18.87	27.19
NHS Grampian	2.74	8.63	11.71	14.92	32.72
NHS Greater Glasgow & Clyde	1.25	9.70	13.90	18.17	40.03
NHS Highland	0.00	9.21	12.93	19.75	53.58
NHS Lanarkshire	5.48	14.96	17.42	22.17	31.58
NHS Lothian	0.43	7.03	10.40	15.84	30.18
NHS Orkney	8.01	9.05	10.58	13.21	17.82
NHS Shetland	4.22	8.46	11.72	14.64	22.72
NHS Tayside	9.88	15.26	17.43	22.43	41.28
NHS Western Isles	12.11	16.55	18.92	27.12	37.59
Scotland		10.42	15.26	20.29	

Opioid analgesics: strong opioids (excluding tramadol preparations) DDDs per 1,000 LS per day

Indicator Group CNS - analgesic **Drug Group** Analgesics (opioids)

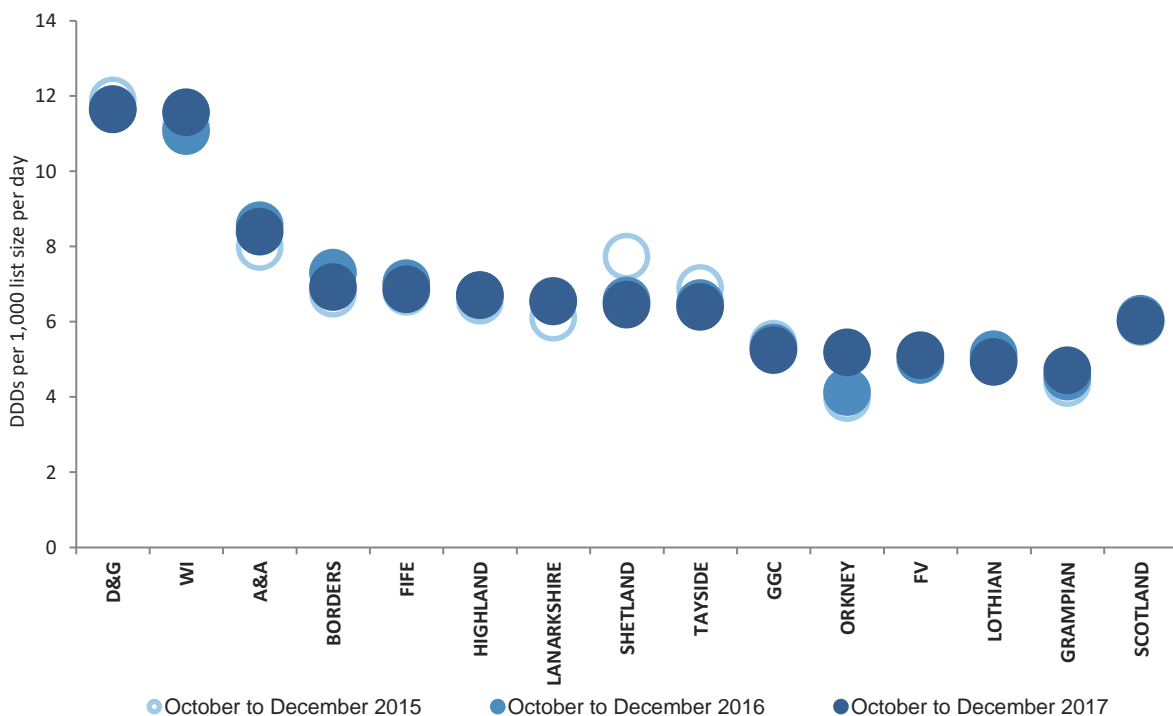
[From: [Quality Prescribing for Chronic Pain – a guide for improvement 2018-2021](#)]

Not only is there a lack of evidence for efficacy of opioids in the long term treatment of chronic pain there is also considerable risk, such as increased risk of overdose, fractures, abuse or dependence; this should be explicitly discussed with patients. A recent Cochrane review found an increased risk of adverse events with opioids vs placebo and vs non-opioid active comparator. There was also an increased risk of serious adverse events vs placebo. The authors noted that “based on the adverse events identified, clinically relevant benefit would need to be clearly demonstrated before long-term use could be considered in people with chronic non-cancer pain in clinical practice”.

'Starting low' and **'Going slow'** is a good strategy for newly prescribed opioids to help minimise side effects.

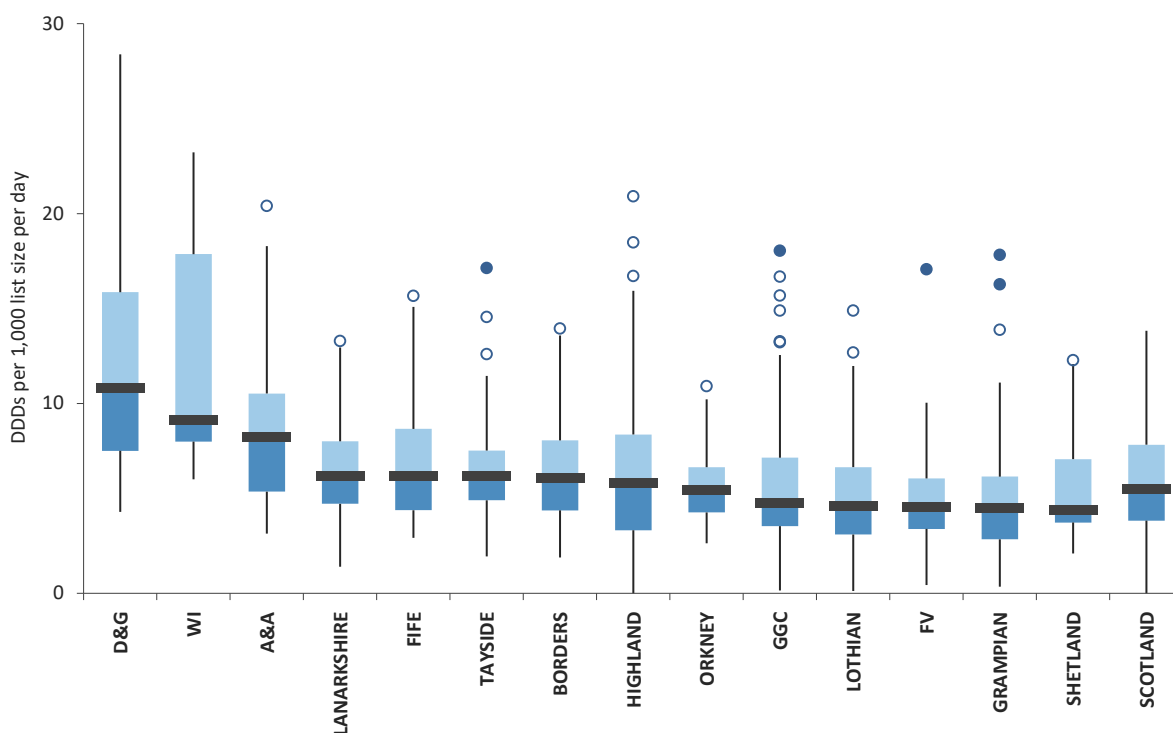
The analysis shows that strong opioid (not tramadol) prescribing has not changed year on year for the last three years across Scotland with some differences between NHS Boards. On average there is a two-fold variation in prescribing between the NHS Boards (4.7 DDDs per 1,000 list size per day in NHS Grampian compared to 11.6 in NHS Dumfries and Galloway). The NHS Boards with the greatest variation between their GP Practices are NHS Western Isles, NHS Dumfries & Galloway, NHS Ayrshire & Arran, NHS Highland, NHS Fife; they all have interquartile ranges greater than 4 DDDs per 1,000 list size per day. There are 26 GP practices whose prescribing rate of strong opioids (excluding tramadol) is identified as outlying within their NHS Board area.

Strong Opioids (excluding tramadol preparations) - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: two outlier practices are not plotted; Highland 46.55 and D&G 35.29

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS Ayrshire & Arran	3.14	5.35	8.22	10.52	20.39
NHS Borders	1.89	4.37	6.08	8.05	13.95
NHS Dumfries & Galloway	4.29	7.50	10.83	15.86	35.29
NHS Fife	2.92	4.37	6.20	8.66	15.66
NHS Forth Valley	0.44	3.39	4.53	6.05	17.06
NHS Grampian	0.35	2.84	4.50	6.14	17.82
NHS Greater Glasgow & Clyde	0.15	3.54	4.74	7.14	18.04
NHS Highland	0.00	3.32	5.84	8.37	46.55
NHS Lanarkshire	1.40	4.71	6.21	8.01	13.29
NHS Lothian	0.12	3.09	4.57	6.65	14.89
NHS Orkney	2.63	4.26	5.43	6.64	10.91
NHS Shetland	2.10	3.73	4.38	7.07	12.27
NHS Tayside	1.94	4.90	6.20	7.52	17.13
NHS Western Isles	6.00	7.99	9.11	17.86	23.22
Scotland		3.83	5.49	7.83	

Opioid analgesics: tramadol DDDs per 1,000 List Size per day

Indicator Group CNS - analgesic **Drug Group** Analgesics (opioids)

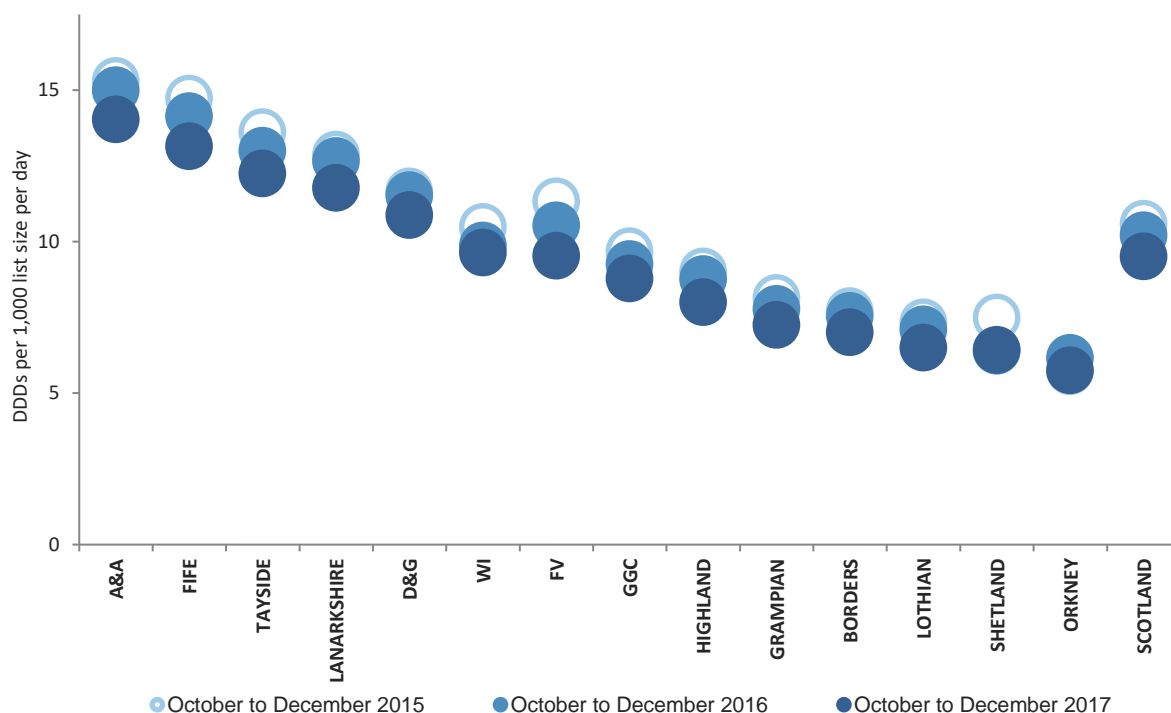
[From: [Quality Prescribing for Chronic Pain – a guide for improvement 2018-2021](#)]

Not only is there a lack of evidence for efficacy of opioids in the long term treatment of chronic pain there is also considerable risk, such as increased risk of overdose, fractures, abuse or dependence; this should be explicitly discussed with patients. A recent Cochrane review found an increased risk of adverse events with opioids vs placebo and vs non-opioid active comparator. There was also an increased risk of serious adverse events vs placebo. The authors noted that “based on the adverse events identified, clinically relevant benefit would need to be clearly demonstrated before long-term use could be considered in people with chronic non-cancer pain in clinical practice”.

'Starting low' and 'Going slow' is a good strategy for newly prescribed opioids to help minimise side effects.

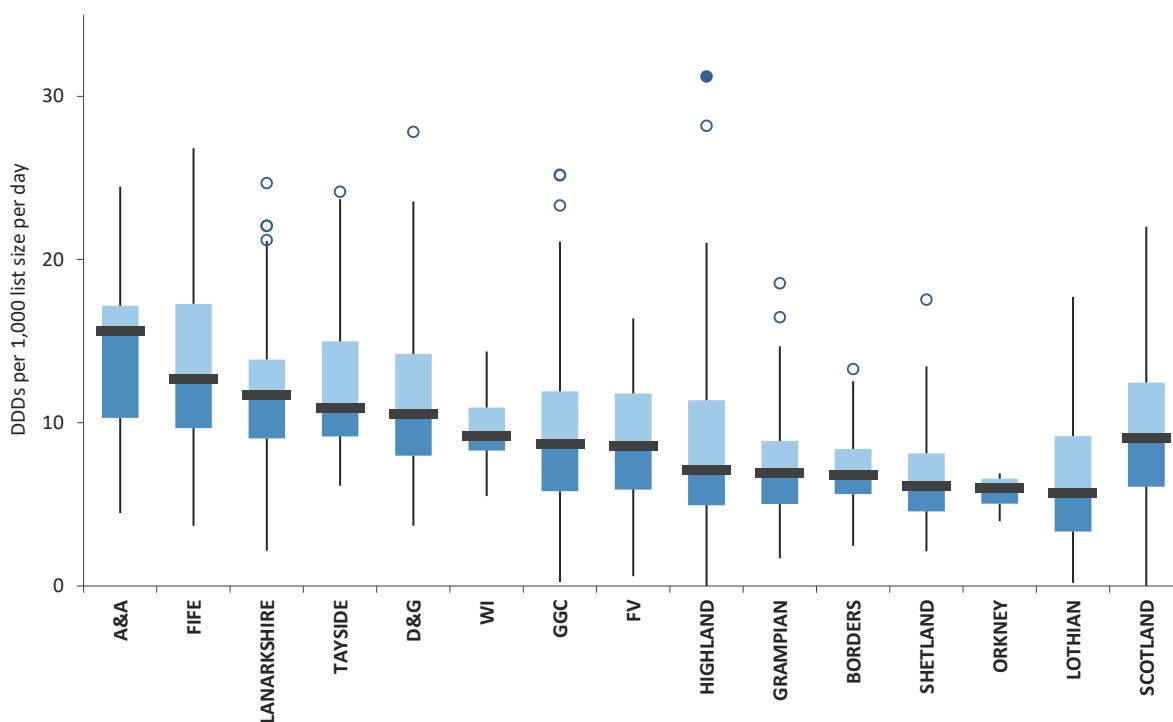
The analysis shows that tramadol prescribing has decreased year on year for the last three years across Scotland and in all the NHS Boards. On average there is nearly a three-fold variation in prescribing between the NHS Boards (5.8 DDDs per 1,000 list size per day in NHS Orkney compared to 14.0 in NHS Dumfries and Galloway). The NHS Boards with the greatest variation between their GP Practices are NHS Fife, NHS Ayrshire & Arran, NHS Highland, NHS Dumfries & Galloway, NHS Greater Glasgow & Clyde; they all have interquartile ranges greater than 6 DDDs per 1,000 list size per day. There are 15 GP practices whose prescribing rate of tramadol is identified as outlying within their NHS Board area.

Tramadol - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS Ayrshire & Arran	4.47	10.29	15.59	17.17	24.46
NHS Borders	2.46	5.63	6.82	8.40	13.28
NHS Dumfries & Galloway	3.70	7.98	10.54	14.21	27.81
NHS Fife	3.69	9.67	12.69	17.29	26.82
NHS Forth Valley	0.60	5.92	8.55	11.80	16.40
NHS Grampian	1.70	5.02	6.90	8.89	18.54
NHS Greater Glasgow & Clyde	0.24	5.80	8.70	11.92	25.18
NHS Highland	0.00	4.96	7.13	11.38	31.20
NHS Lanarkshire	2.16	9.04	11.68	13.88	24.68
NHS Lothian	0.20	3.34	5.68	9.19	17.72
NHS Orkney	3.97	5.03	6.03	6.58	6.91
NHS Shetland	2.13	4.58	6.14	8.13	17.55
NHS Tayside	6.14	9.17	10.88	14.98	24.15
NHS Western Isles	5.51	8.31	9.20	10.94	14.37
Scotland		6.09	9.05	12.46	

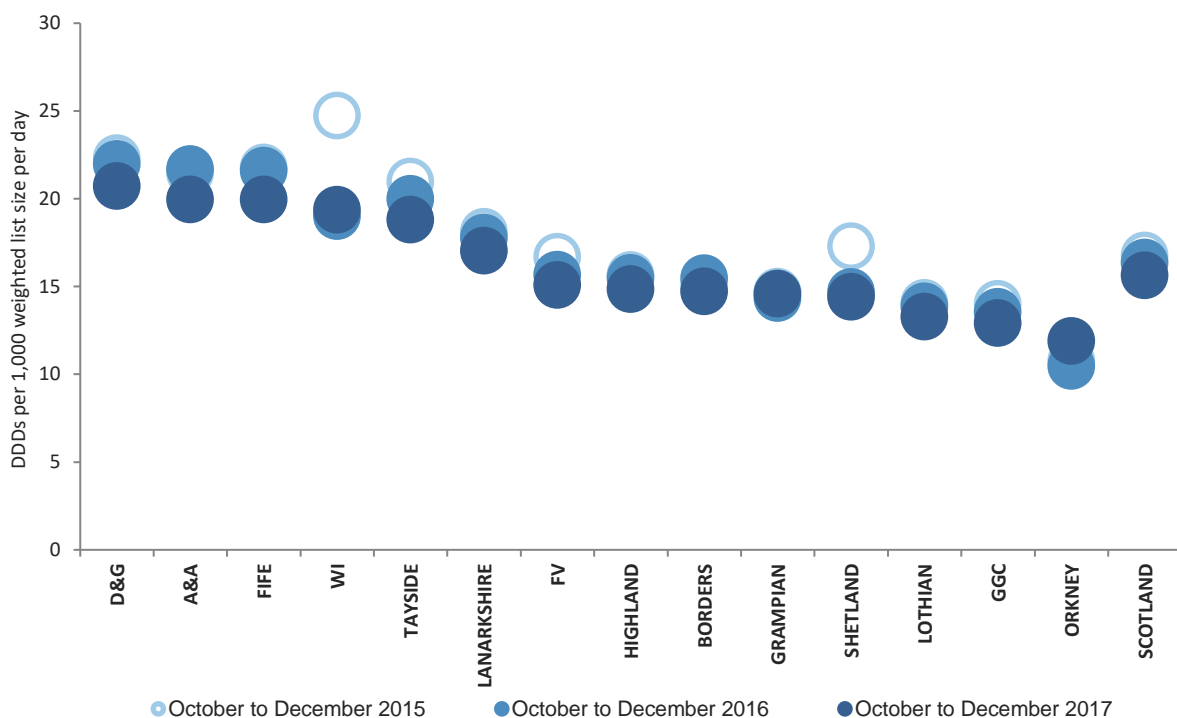
Opioid analgesics: strong opioids (including tramadol preparations) DDDs per 1,000 Weighted List Size per day

Indicator Group CNS - analgesic **Drug Group** Analgesics (opioids)

The previous measure made available using the population figures that have been weighted to account for demographic variation. These weighted populations are available within the PRISMS and are based on the GP practice component of the NRAC formula (<http://www.isdscotland.org/Health-Topics/Finance/Resource-Allocation-Formula>).

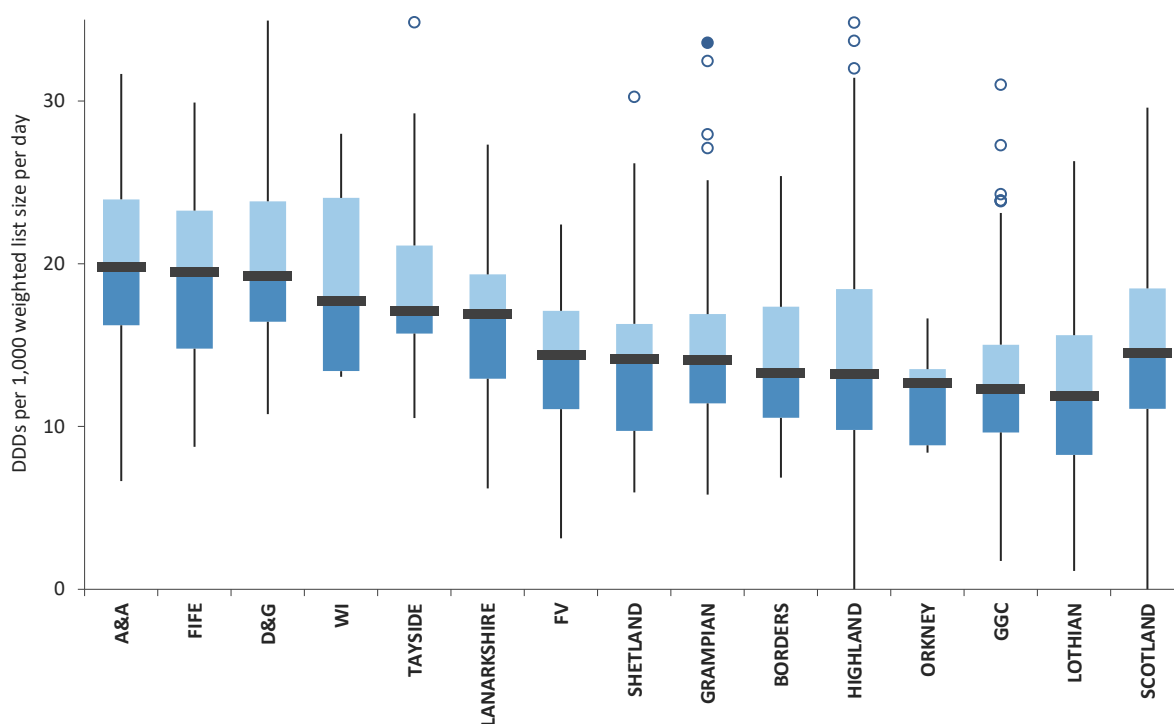
The analysis shows that strong opioid prescribing has decreased year on year for the last three years across Scotland with differences between NHS Boards. On average there is nearly a two-fold variation in prescribing between the NHS Boards (11.9 DDDs per 1,000 weighted list size per day in NHS Orkney compared to 20.7 in NHS Dumfries and Galloway). The NHS Boards with the greatest variation between their GP Practices are NHS Western Isles, NHS Highland, NHS Fife, NHS Ayrshire & Arran; they all have interquartile ranges greater than 7.4 DDDs per 1,000 weighted list size per day. There are 17 GP practices whose prescribing rate of strong opioids is identified as outlying within their NHS Board area.

Strong Opioids (including tramadol preparations) - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: two outlier practices are not plotted; Highland 53.17 and D&G 42.26

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS Ayrshire & Arran	6.65	16.22	19.81	23.96	31.66
NHS Borders	6.86	10.53	13.29	17.36	25.39
NHS Dumfries & Galloway	10.76	16.43	19.27	23.84	42.26
NHS Fife	8.75	14.78	19.47	23.27	29.91
NHS Forth Valley	3.13	11.07	14.39	17.11	22.41
NHS Grampian	5.82	11.42	14.10	16.91	33.57
NHS Greater Glasgow & Clyde	1.74	9.64	12.33	15.03	31.00
NHS Highland	0.00	9.79	13.23	18.44	53.17
NHS Lanarkshire	6.20	12.94	16.91	19.35	27.32
NHS Lothian	1.13	8.25	11.86	15.61	26.31
NHS Orkney	8.40	8.85	12.65	13.53	16.64
NHS Shetland	5.95	9.74	14.12	16.31	30.24
NHS Tayside	10.52	15.71	17.13	21.13	34.82
NHS Western Isles	13.06	13.40	17.74	24.05	27.99
Scotland		11.08	14.54	18.49	

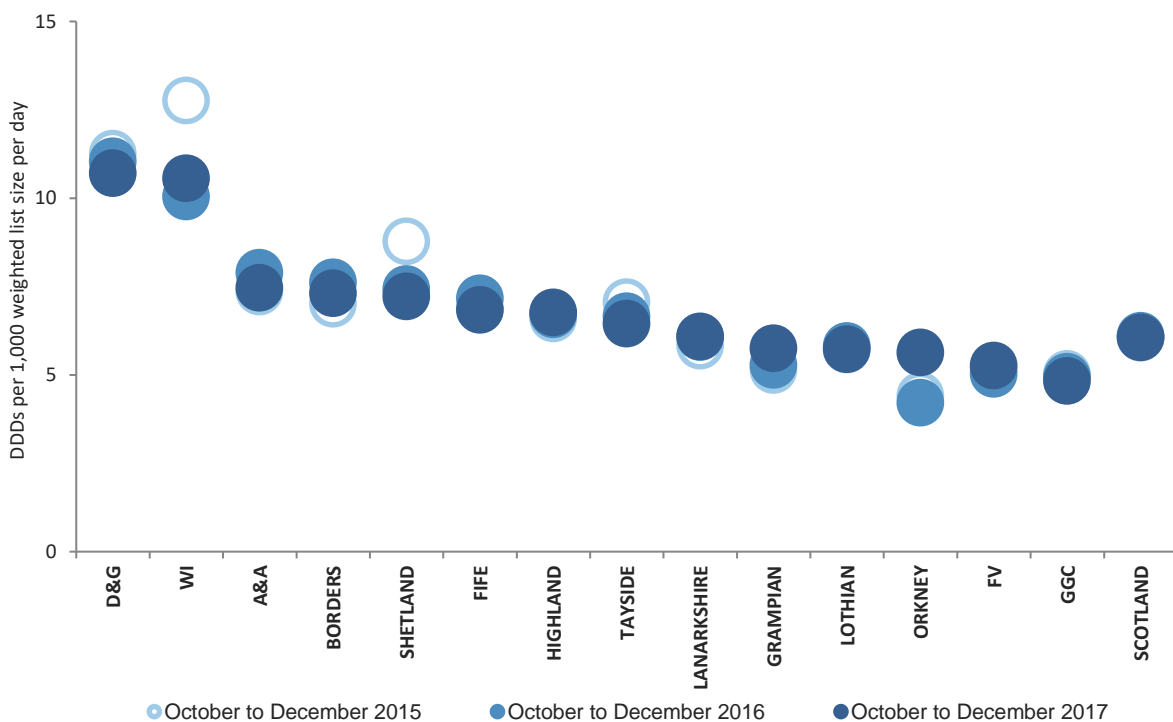
Opioid analgesics: strong opioids (excluding tramadol preparations) DDDs per 1,000 Weighted List Size per day

Indicator Group CNS - analgesic **Drug Group** Analgesics (opioids)

The previous measure made available using the population figures that have been weighted to account for demographic variation. These weighted populations are available within the PRISMS and are based on the GP practice component of the NRAC formula (<http://www.isdscotland.org/Health-Topics/Finance/Resource-Allocation-Formula>).

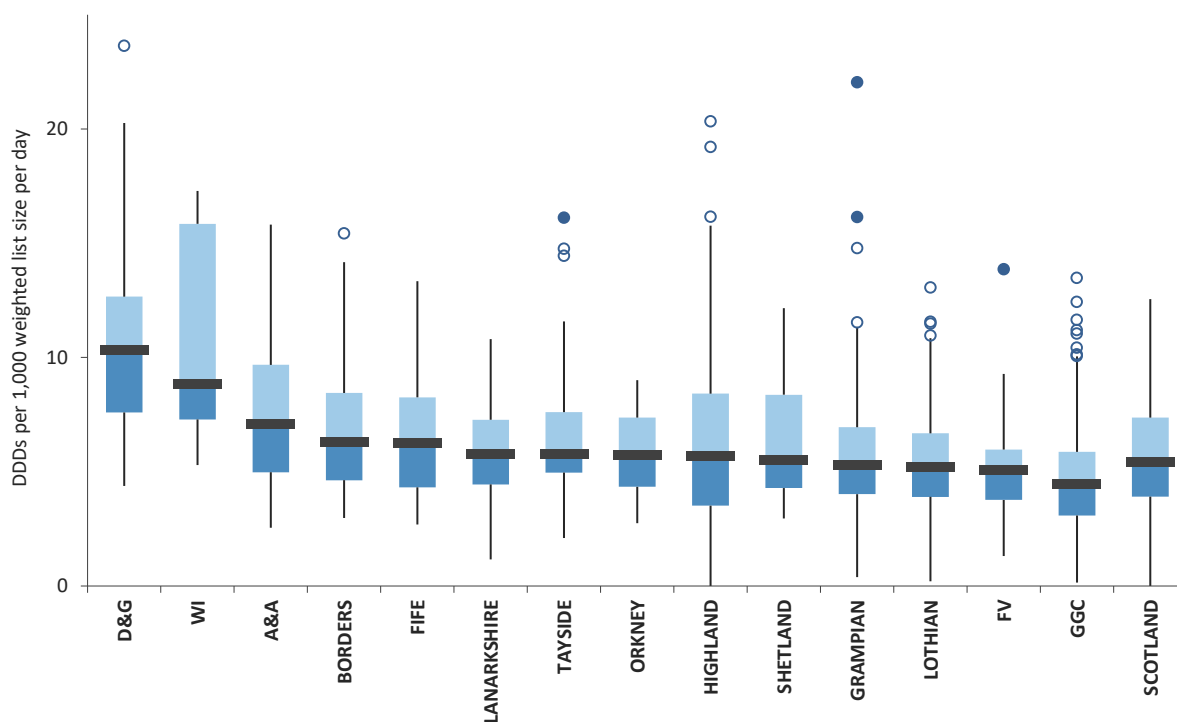
The analysis shows that strong opioid (not tramadol) prescribing has not changed year on year for the last three years across Scotland with some differences between NHS Boards. On average there is a two-fold variation in prescribing between the NHS Boards (4.8 DDDs per 1,000 weighted list size per day in NHS Greater Glasgow and Clyde compared to 10.7 in NHS Dumfries and Galloway). The NHS Boards with the greatest variation between their GP Practices are NHS Western Isles, NHS Dumfries & Galloway, NHS Highland, NHS Ayrshire & Arran; they all have interquartile ranges greater than 4.5 DDDs per 1,000 weighted list size per day. There are 26 GP practices whose prescribing rate of strong opioids (excluding tramadol) is identified as outlying within their NHS Board area.

Strong Opioids (excluding tramadol preparations) - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: one outlier practice is not plotted; Highland 46.19

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS Ayrshire & Arran	2.55	4.98	7.09	9.68	15.82
NHS Borders	2.98	4.63	6.33	8.45	15.43
NHS Dumfries & Galloway	4.38	7.60	10.32	12.66	23.64
NHS Fife	2.69	4.32	6.27	8.26	13.34
NHS Forth Valley	1.31	3.77	5.07	5.97	13.86
NHS Grampian	0.39	4.02	5.29	6.95	22.04
NHS Greater Glasgow & Clyde	0.15	3.08	4.45	5.87	13.48
NHS Highland	0.00	3.52	5.68	8.42	46.19
NHS Lanarkshire	1.16	4.45	5.77	7.28	10.80
NHS Lothian	0.21	3.90	5.19	6.68	13.06
NHS Orkney	2.75	4.34	5.75	7.37	9.01
NHS Shetland	2.96	4.29	5.50	8.37	12.16
NHS Tayside	2.10	4.96	5.77	7.61	16.11
NHS Western Isles	5.29	7.29	8.82	15.85	17.29
Scotland		3.91	5.41	7.37	

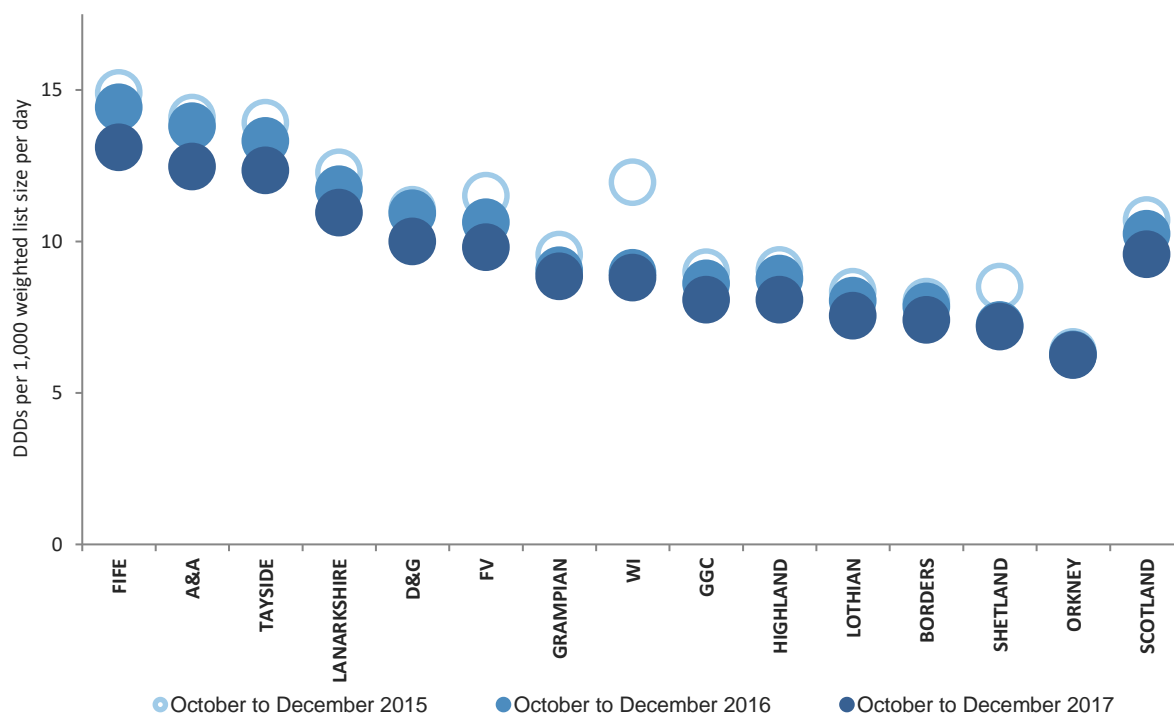
Opioid analgesics: tramadol DDDs per 1,000 Weighted List Size per day

Indicator Group CNS - analgesic **Drug Group** Analgesics (opioids)

The previous measure made available using the population figures that have been weighted to account for demographic variation. These weighted populations are available within the PRISMS and are based on the GP practice component of the NRAC formula (<http://www.isdscotland.org/Health-Topics/Finance/Resource-Allocation-Formula/>).

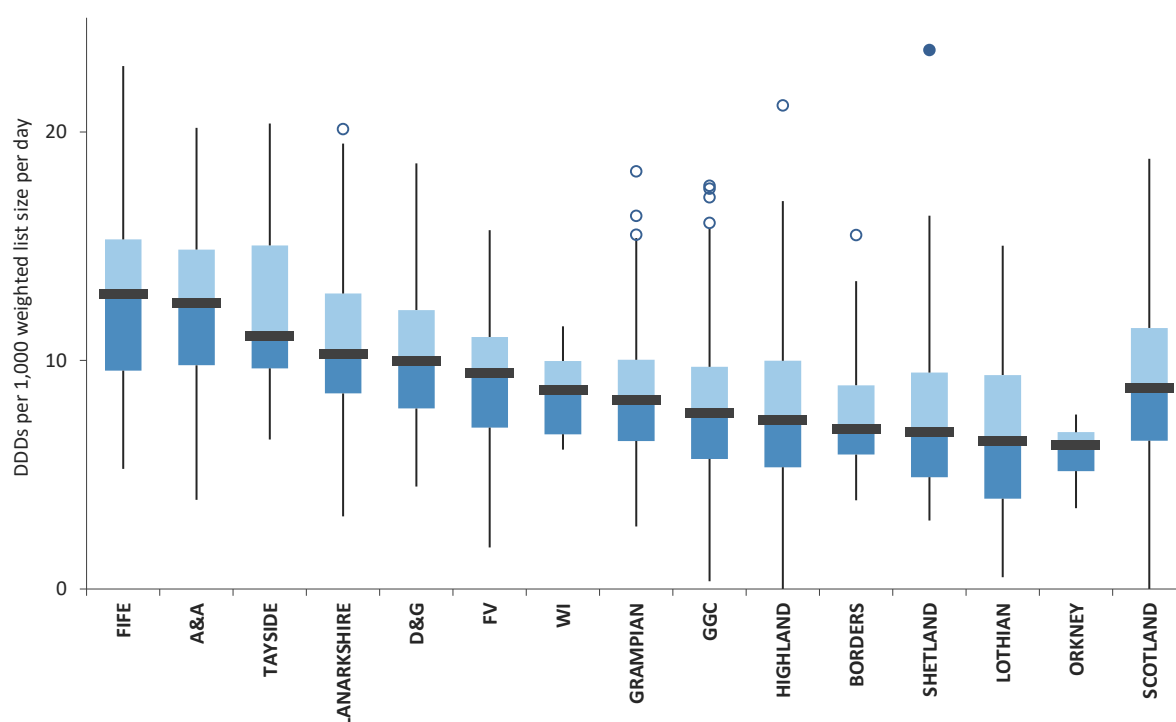
The analysis shows that tramadol prescribing has decreased year on year for the last three years across Scotland and in all the NHS Boards. On average there is two-fold variation in prescribing between the NHS Boards (6.2 DDDs per 1,000 weighted list size per day in NHS Orkney compared to 13.1 in NHS Fife). The NHS Boards with the greatest variation between their GP Practices are NHS Fife, NHS Lothian, NHS Tayside, NHS Ayrshire & Arran; they all have interquartile ranges greater than 5 DDDs per 1,000 weighted list size per data. There are 12 GP practices whose prescribing rate of tramadol is identified as outlying within their NHS Board area.

Tramadol - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: one outlier practice is not plotted; Highland 30.54

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS Ayrshire & Arran	3.90	9.79	12.52	14.86	20.18
NHS Borders	3.88	5.88	7.01	8.92	15.48
NHS Dumfries & Galloway	4.48	7.90	9.98	12.21	18.63
NHS Fife	5.26	9.56	12.89	15.30	22.89
NHS Forth Valley	1.82	7.07	9.44	11.03	15.70
NHS Grampian	2.74	6.48	8.25	10.03	18.26
NHS Greater Glasgow & Clyde	0.34	5.69	7.71	9.72	17.64
NHS Highland	0.00	5.33	7.38	9.99	30.54
NHS Lanarkshire	3.18	8.56	10.28	12.93	20.11
NHS Lothian	0.52	3.95	6.48	9.37	15.02
NHS Orkney	3.54	5.16	6.30	6.86	7.64
NHS Shetland	3.00	4.90	6.87	9.47	23.59
NHS Tayside	6.54	9.66	11.05	15.04	20.37
NHS Western Isles	6.10	6.78	8.71	9.98	11.50
Scotland		6.49	8.79	11.43	

Lidocaine: lidocaine plasters GIC per 1,000 List Size per day

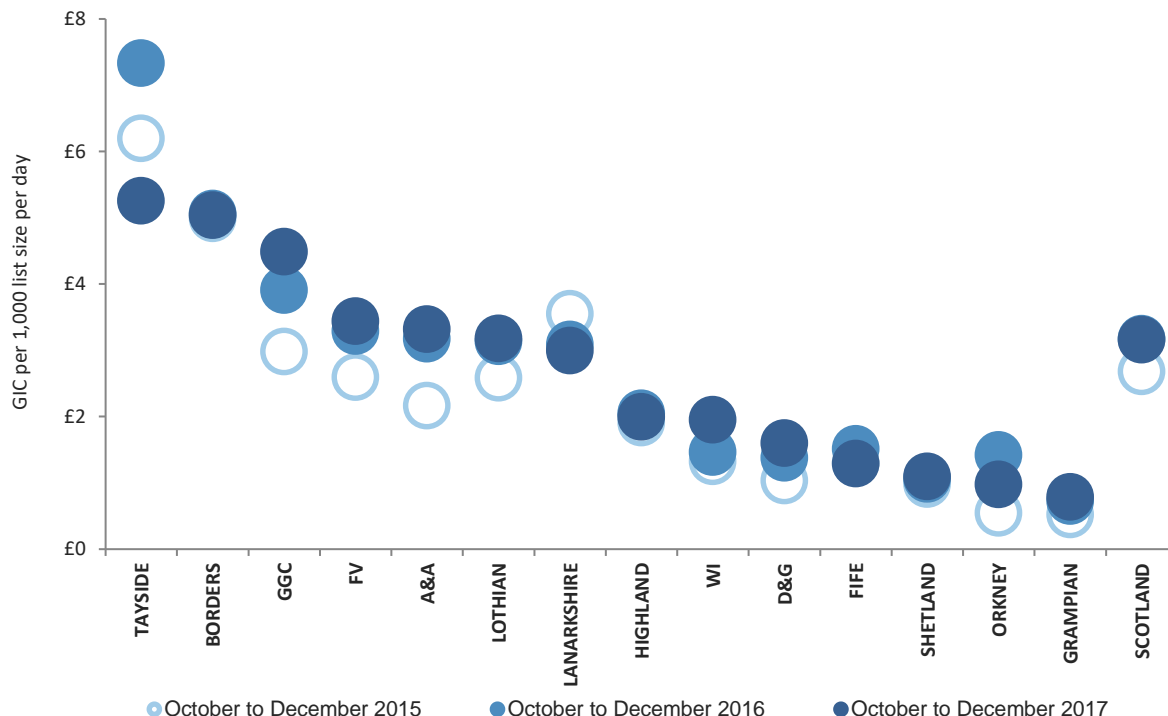
Indicator Group CNS - analgesic **Drug Group** Topical Anaesthetic

Lidocaine plasters are marketed for the symptomatic relief of neuropathic pain associated with previous herpes zoster infection (post-herpetic neuralgia, PHN) in adults (Versatis®, Ralvo®). Versatis® is restricted to use in patients who are intolerant of first-line systemic therapies for PHN or where these therapies have been ineffective. [\[SMC\]](#)

Despite these restrictions lidocaine plasters are frequently prescribed. Lidocaine prescribing should be reviewed. There is no evidence from good quality randomised controlled studies to support the regular use of topical lidocaine to treat neuropathic pain, although low quality individual studies indicated that it may have a role in pain relief. [\[Quality Prescribing for Chronic Pain – a guide for improvement 2018-2021\]](#)

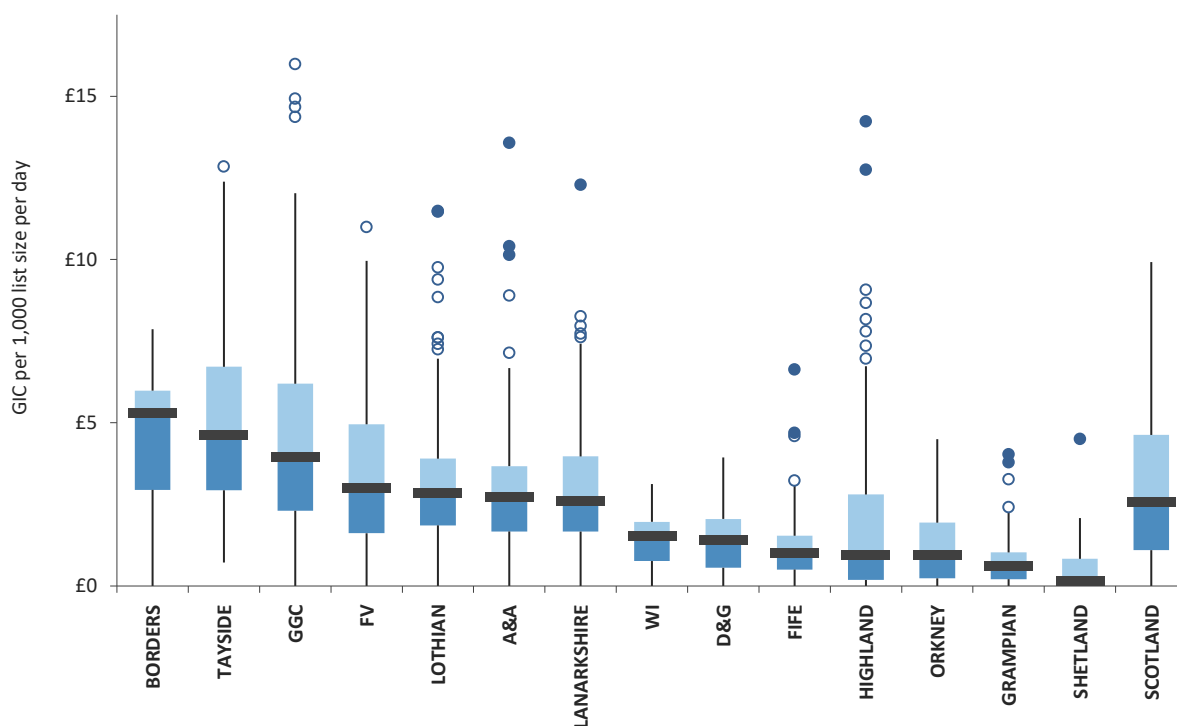
The analysis shows that lidocaine plaster prescribing increased from 2015 to 2016 and remained the same from 2016 to 2017 across Scotland; differences exist in the NHS Boards. On average there is a 6-fold variation in prescribing between the NHS Boards (£0.79 per 1,000 list size per day in NHS Grampian compared to £5.26 in NHS Tayside). The NHS Boards with the greatest variation between their GP Practices are NHS Greater Glasgow & Clyde, NHS Tayside, NHS Forth Valley, NHS Borders; they all have interquartile ranges greater than £3 per 1,000 list size per day. There are 43 GP practices whose prescribing rate of lidocaine plasters is identified as outlying within their NHS Board area.

Lidocaine Plasters - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: one outlier practice is not plotted; Orkney £31.06

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS Ayrshire & Arran	£0.00	£1.67	£2.74	£3.67	£13.57
NHS Borders	£0.00	£2.95	£5.30	£5.98	£7.87
NHS Dumfries & Galloway	£0.00	£0.56	£1.42	£2.06	£3.94
NHS Fife	£0.00	£0.51	£1.01	£1.54	£6.63
NHS Forth Valley	£0.00	£1.62	£2.99	£4.95	£10.99
NHS Grampian	£0.00	£0.21	£0.62	£1.03	£4.03
NHS Greater Glasgow & Clyde	£0.00	£2.31	£3.94	£6.20	£15.98
NHS Highland	£0.00	£0.18	£0.96	£2.80	£14.23
NHS Lanarkshire	£0.00	£1.67	£2.60	£3.97	£12.29
NHS Lothian	£0.00	£1.86	£2.85	£3.90	£11.49
NHS Orkney	£0.00	£0.24	£0.95	£1.94	£31.06
NHS Shetland	£0.00	£0.00	£0.16	£0.83	£4.50
NHS Tayside	£0.72	£2.93	£4.62	£6.71	£12.85
NHS Western Isles	£0.00	£0.77	£1.52	£1.97	£3.12
Scotland		£1.10	£2.56	£4.63	

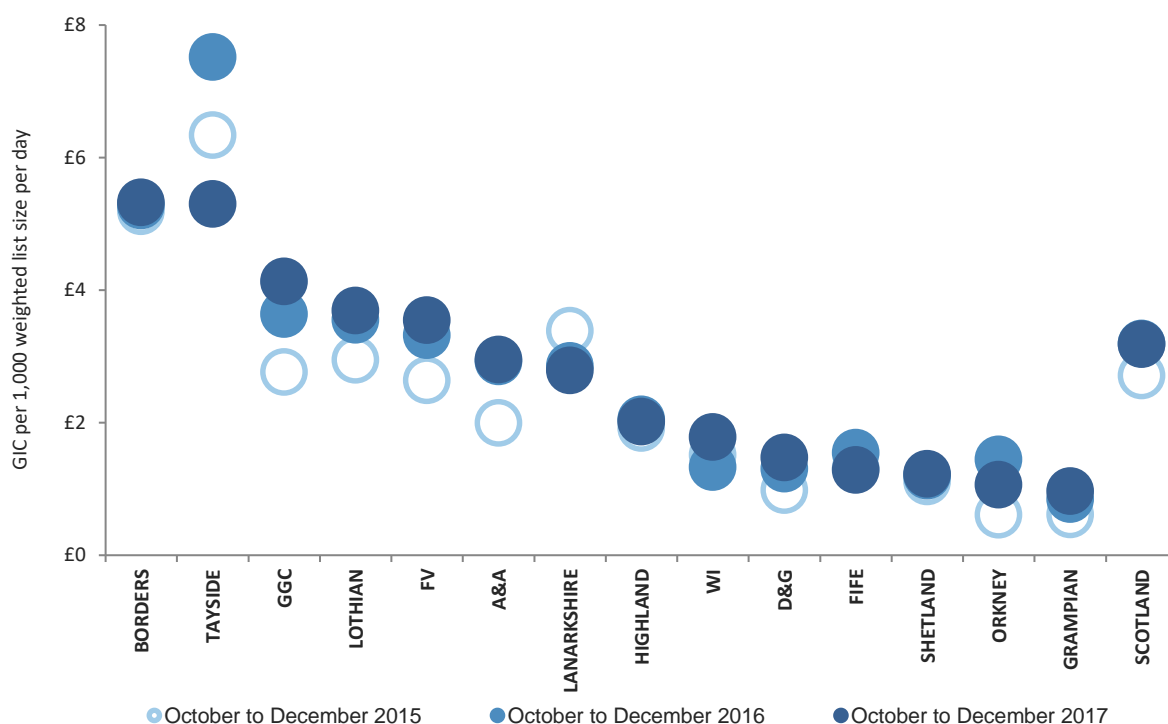
Lidocaine: lidocaine plasters GIC per 1,000 Weighted List Size per day

Indicator Group CNS - analgesic **Drug Group** Topical Anaesthetic

The previous measure made available using the population figures that have been weighted to account for demographic variation. These weighted populations are available within the PRISMS and are based on the GP practice component of the NRAC formula (<http://www.isdscotland.org/Health-Topics/Finance/Resource-Allocation-Formula>).

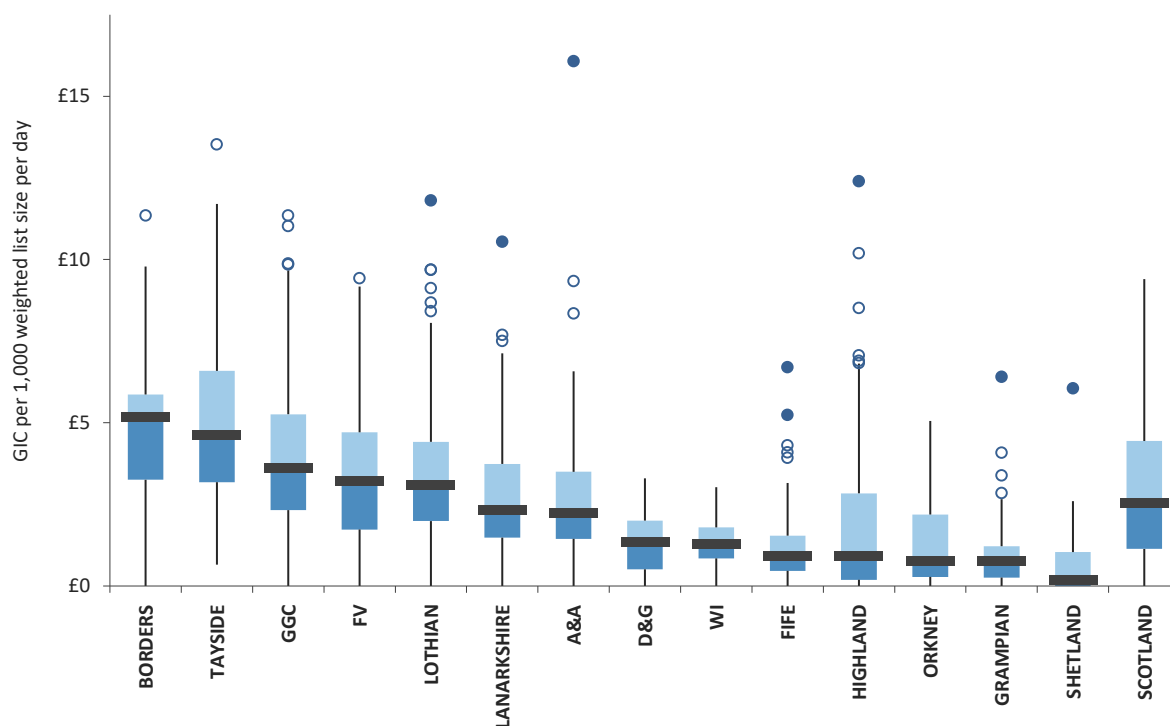
The analysis shows that lidocaine plaster prescribing increased from 2015 to 2016 and remained the same from 2016 to 2017 across Scotland; differences exist in the NHS Boards. On average there is a 5-fold variation in prescribing between the NHS Boards (£0.96 per 1,000 weighted list size per day in NHS Grampian compared to £5.32 in NHS Borders). The NHS Boards with the greatest variation between their GP Practices are NHS Tayside, NHS Forth Valley, NHS Greater Glasgow & Clyde; they all have interquartile ranges greater than £2.75 per 1,000 weighted list size per day. There are 36 GP practices whose prescribing rate of lidocaine plasters is identified as outlying within their NHS Board area.

Lidocaine plasters - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: one outlier practice is not plotted; Orkney £27.67

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS Ayrshire & Arran	£0.00	£1.45	£2.24	£3.50	£16.08
NHS Borders	£0.00	£3.25	£5.19	£5.87	£11.35
NHS Dumfries & Galloway	£0.00	£0.51	£1.35	£2.00	£3.30
NHS Fife	£0.00	£0.47	£0.92	£1.54	£6.70
NHS Forth Valley	£0.00	£1.73	£3.21	£4.71	£9.43
NHS Grampian	£0.00	£0.26	£0.76	£1.22	£6.41
NHS Greater Glasgow & Clyde	£0.00	£2.33	£3.61	£5.26	£11.35
NHS Highland	£0.00	£0.19	£0.92	£2.84	£12.40
NHS Lanarkshire	£0.00	£1.48	£2.33	£3.74	£10.54
NHS Lothian	£0.00	£1.99	£3.09	£4.42	£11.81
NHS Orkney	£0.00	£0.28	£0.76	£2.19	£27.67
NHS Shetland	£0.00	£0.00	£0.19	£1.04	£6.05
NHS Tayside	£0.65	£3.18	£4.62	£6.59	£13.52
NHS Western Isles	£0.00	£0.85	£1.28	£1.80	£3.03
Scotland		£1.13	£2.56	£4.44	

Hypnotics and Anxiolytics: hypnotics and anxiolytics DDDs per 1,000 List Size per day

Indicator Group CNS – psychotropic **Drug Group** Hypnotics and Anxiolytics

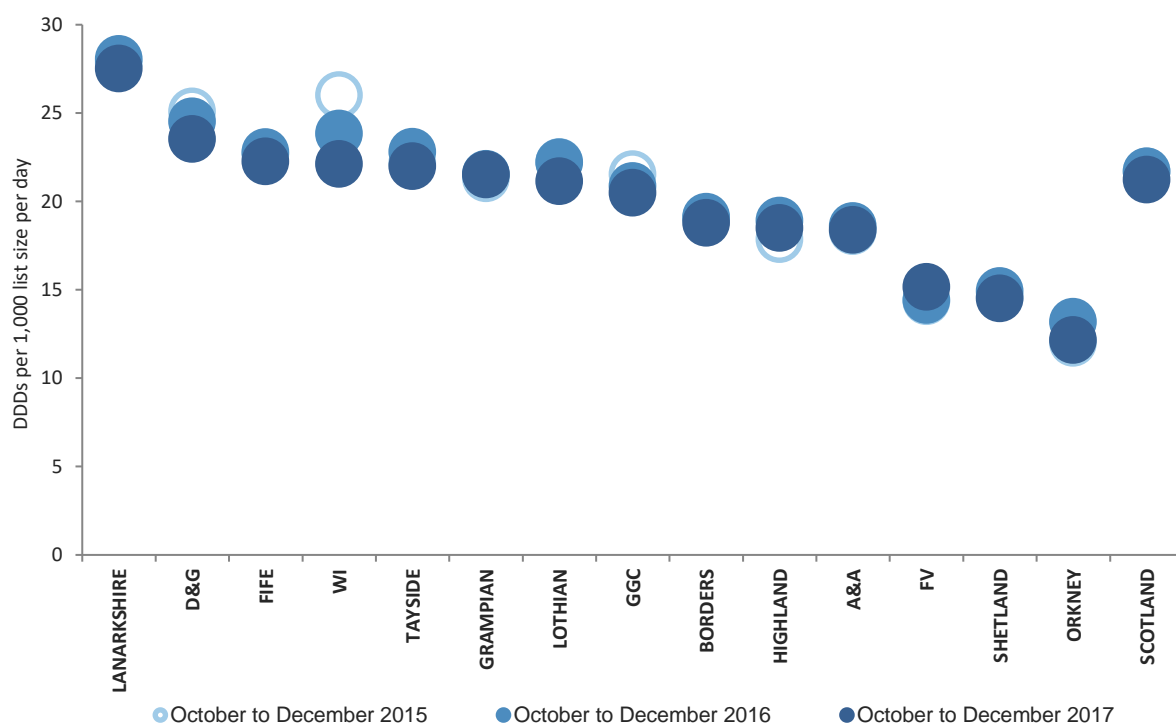
[From: [Hypnotics & Anxiolytics Practice Guide](#)]

All benzodiazepines act by enhancing the actions of a natural brain chemical, GABA (gamma-aminobutyric acid). GABA has a general quietening influence on the brain: it is in some ways the body’s natural hypnotic and tranquilliser. The effects of long-term use are drowsiness and falls; reduction in a person’s own coping skills; impaired judgement and dexterity; increased risk of experiencing a road traffic accident; forgetfulness; confusion; depression; irritability; aggression; impulsivity; digestive problems and dependence.

It is possible to withdraw many patients from long-term hypnotic and anxiolytics if the problems linked to their long-term use are explained to them and they feel that they will be supported through the withdrawal process. A number of studies have shown that between 40 to 80% of patients can discontinue the benzodiazepine they have been taking for more than a year through a managed process.

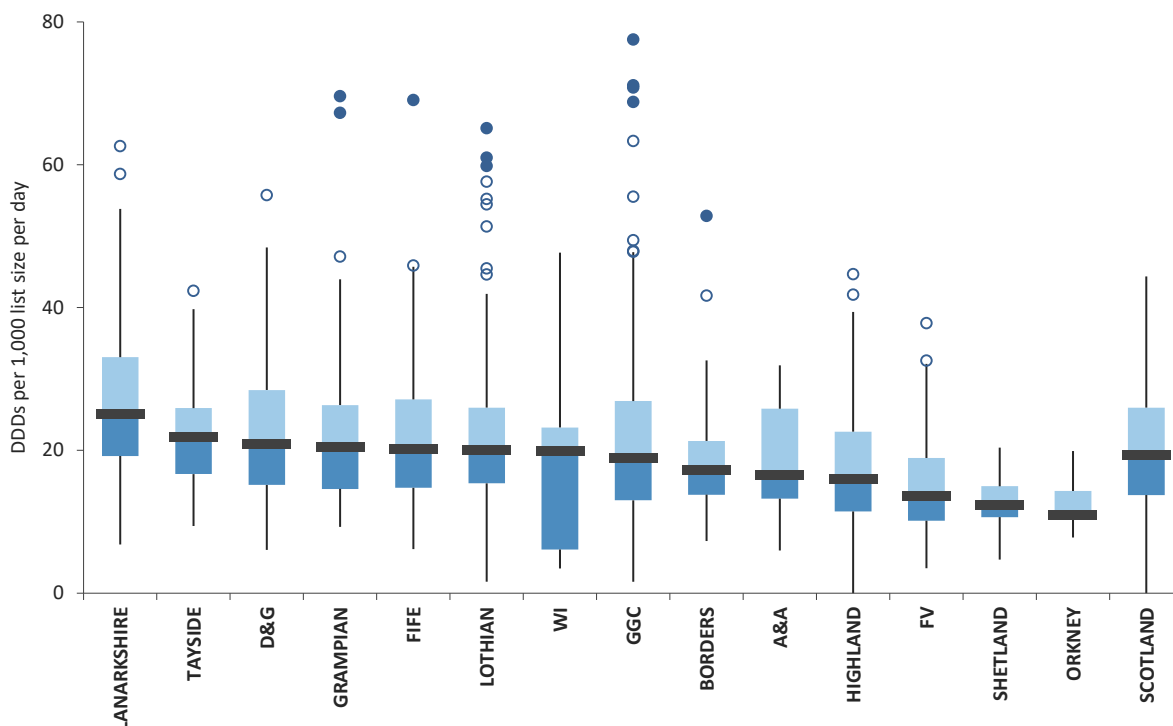
The analysis shows that hypnotics and anxiolytics prescribing has remained steady year on year for the last three years across Scotland; differences exist between the NHS Boards. On average there is a 2-fold variation in prescribing between the NHS Boards (12.2 DDDs per 1,000 list size per day in NHS Orkney compared to 27.6 in NHS Lanarkshire). The NHS Boards with the greatest variation between their GP Practices are NHS Western Isles, NHS Greater Glasgow & Clyde, NHS Lanarkshire, NHS Dumfries & Galloway; they all have interquartile ranges greater than 13 DDDs per 1,000 list size per day. There are 36 GP practices whose prescribing rate of hypnotics and anxiolytics is identified as outlying within their NHS Board area.

Hypnotics and Anxiolytics - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: three outlier practices are not plotted; Lothian 93.23, Grampian 89.14 and Lanarkshire 80.55

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS Ayrshire & Arran	5.98	13.25	16.58	25.84	31.91
NHS Borders	7.31	13.80	17.28	21.32	52.84
NHS Dumfries & Galloway	6.06	15.16	20.88	28.46	55.73
NHS Fife	6.18	14.76	20.14	27.14	69.06
NHS Forth Valley	3.50	10.15	13.63	18.94	37.83
NHS Grampian	9.29	14.61	20.40	26.35	89.14
NHS Greater Glasgow & Clyde	1.60	13.00	18.88	26.91	77.52
NHS Highland	0.00	11.45	16.08	22.62	44.68
NHS Lanarkshire	6.82	19.21	25.12	33.05	80.55
NHS Lothian	1.61	15.38	20.10	25.99	93.23
NHS Orkney	7.80	10.46	10.90	14.31	19.91
NHS Shetland	4.71	10.66	12.41	14.97	20.39
NHS Tayside	9.41	16.68	21.96	25.92	42.32
NHS Western Isles	3.46	6.12	19.96	23.22	47.69
Scotland		13.75	19.30	25.99	

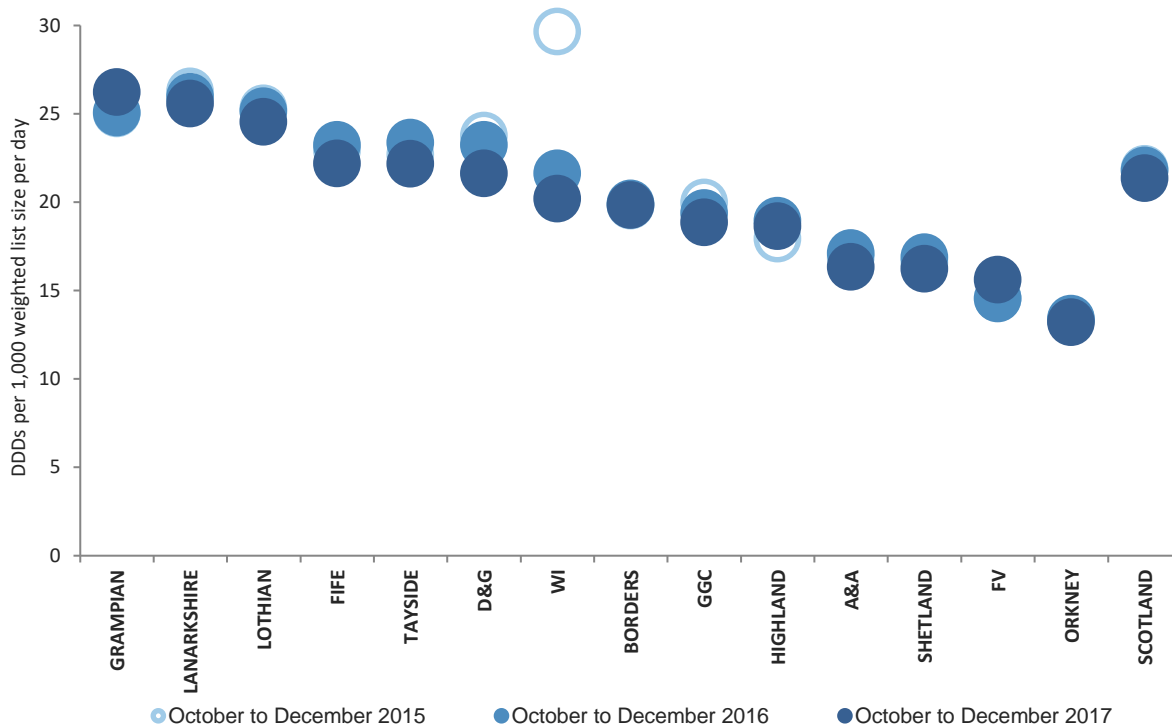
Hypnotics and Anxiolytics: hypnotics and anxiolytics DDDs per 1,000 Weighted List Size per day

Indicator Group CNS – psychotropic **Drug Group** Hypnotics and Anxiolytics

The previous measure made available using the population figures that have been weighted to account for demographic variation. These weighted populations are available within the PRISMS and are based on the GP practice component of the NRAC formula (<http://www.isdscotland.org/Health-Topics/Finance/Resource-Allocation-Formula/>).

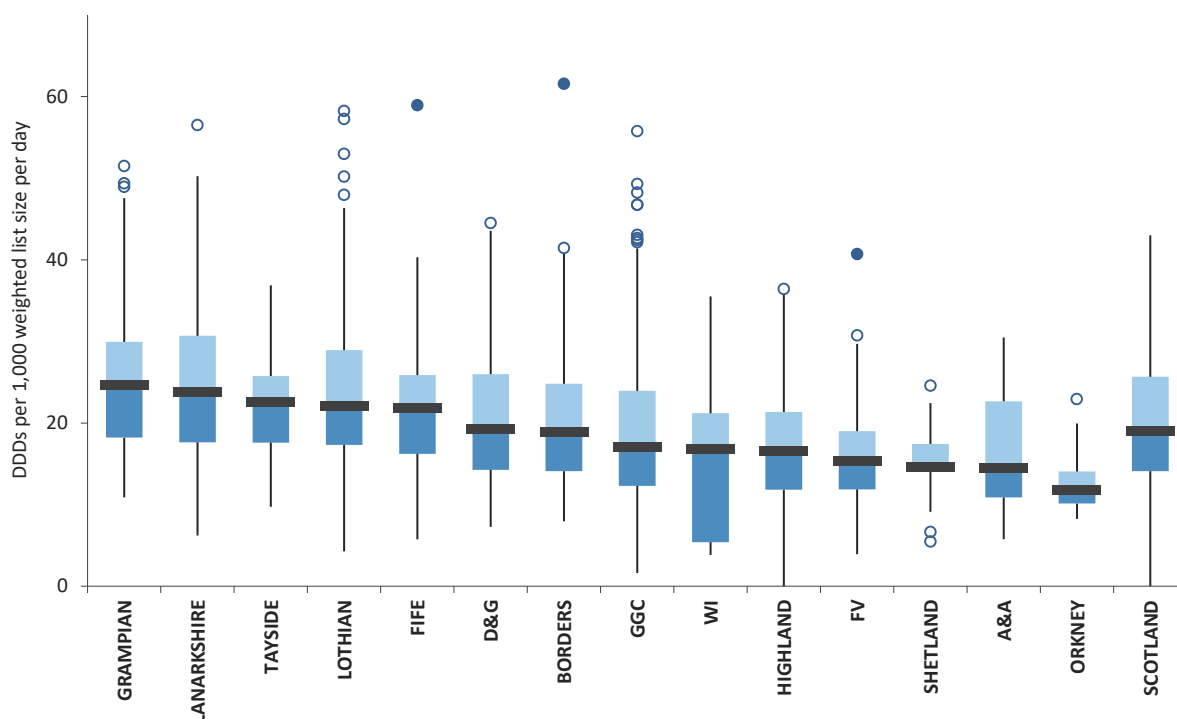
The analysis shows that hypnotics and anxiolytics prescribing has remained steady year on year for the last three years across Scotland; differences exist between the NHS Boards. On average there is a 2-fold variation in prescribing between the NHS Boards (13.1 DDDs per 1,000 weighted list size per day in NHS Orkney compared to 26.2 in NHS Grampian). The NHS Boards with the greatest variation between their GP Practices are NHS Western Isles, NHS Lanarkshire; they have interquartile ranges greater than 12 DDDs per 1,000 weighted list size per day. There are 34 GP practices whose prescribing rate of hypnotics and anxiolytics is identified as outlying within their NHS Board area.

Hypnotics and Anxiolytics - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: four outlier practices are not plotted; Lothian 147.81, Grampian 108.23, 87.69, 74.38 and Lanarkshire 73.49

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	5.76	10.88	14.49	22.66	30.48
NHS BORDERS	7.96	14.09	18.95	24.80	61.57
NHS DUMFRIES & GALLOWAY	7.27	14.27	19.29	25.98	44.49
NHS FIFE	5.74	16.23	21.81	25.86	58.95
NHS FORTH VALLEY	3.93	11.86	15.30	19.00	40.71
NHS GRAMPPIAN	10.89	18.20	24.65	29.94	108.23
NHS GREATER GLASGOW & CLYDE	1.62	12.29	17.11	23.93	55.74
NHS HIGHLAND	0.00	11.81	16.53	21.36	36.41
NHS LANARKSHIRE	6.21	17.64	23.79	30.68	73.49
NHS LOTHIAN	4.27	17.31	22.13	28.93	147.81
NHS ORKNEY	8.26	10.12	11.77	14.05	22.91
NHS SHETLAND	5.46	14.11	14.60	17.44	24.56
NHS TAYSIDE	9.73	17.60	22.54	25.76	36.87
NHS WESTERN ISLES	3.83	5.40	16.86	21.19	35.51
SCOTLAND		14.10	19.01	25.66	

Antidiabetic Drugs: number of people prescribed metformin as percentage of all people prescribed an anti-diabetic drug

Indicator Group Endocrine **Drug Group** Antidiabetic drugs

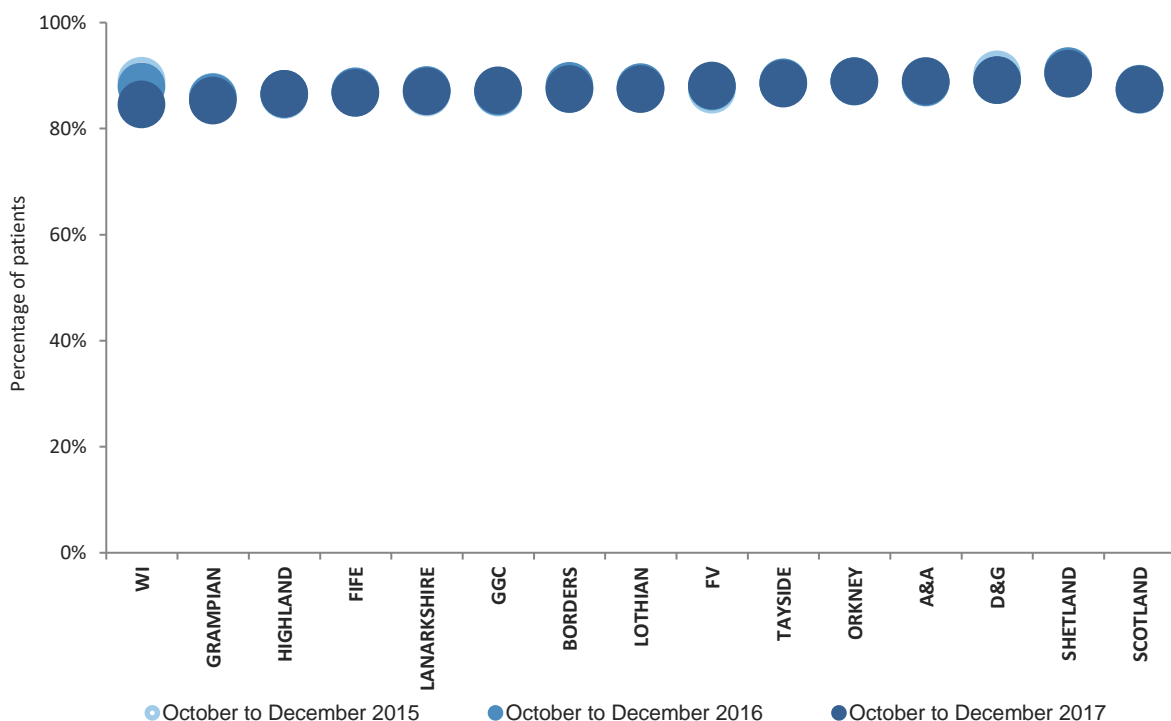
Metformin is recommended as the first-choice antidiabetic drug in adults with type-2 diabetes unless it is contraindicated or osmotic symptoms exist. [\[SIGN 154\]](#) Starting with 2 or 3 tablets (500mg) daily and slow increasing the dose may improve gastrointestinal tolerability.

In adults with type 2 diabetes, review the dose of metformin if the estimated glomerular filtration rate (eGFR) is below 45 ml/minute/1.73m² and stop metformin if the eGFR is below 30 ml/minute/1.73m². [\[NICE guidance\]](#)

Metformin should be the first-line agent due to its proven evidence of survival advantage. [\[Quality Prescribing for Diabetes – a guide for improvement 2018-2021\]](#)

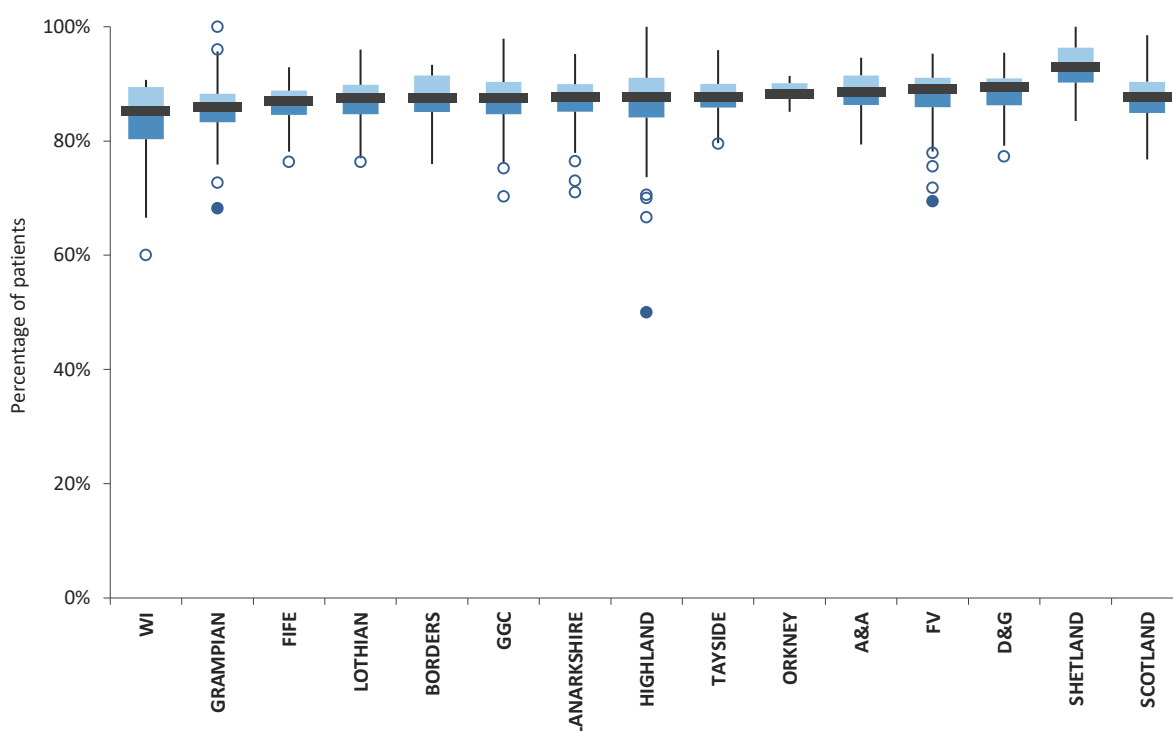
The analysis shows that metformin prescribing has remained consistent year on year for the last three years across Scotland; differences exist within the NHS Boards. There is little variation between the NHS Boards in the average proportion of metformin prescribed (90.3% in NHS Shetland compared to 84.5% in NHS Western Isles). The NHS Boards with the greatest variation between their GP Practices are NHS Western Isles, NHS Highland, NHS Borders, NHS Shetland; they all have interquartile ranges greater than 6%. There are 22 GP practices whose prescribing of metformin is identified as outlying within their NHS Board area.

Metformin - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	79.38%	86.28%	88.49%	91.49%	94.58%
NHS BORDERS	75.96%	85.08%	87.55%	91.47%	93.33%
NHS DUMFRIES & GALLOWAY	77.27%	86.26%	89.44%	90.98%	95.45%
NHS FIFE	76.35%	84.54%	86.97%	88.82%	92.90%
NHS FORTH VALLEY	69.42%	85.90%	89.10%	91.07%	95.29%
NHS GRAMPIAN	68.18%	83.31%	85.95%	88.26%	100.00%
NHS GREATER GLASGOW & CLYDE	70.27%	84.71%	87.59%	90.32%	97.92%
NHS HIGHLAND	50.00%	84.11%	87.77%	91.06%	100.00%
NHS LANARKSHIRE	71.01%	85.13%	87.72%	89.94%	95.24%
NHS LOTHIAN	76.35%	84.69%	87.50%	89.84%	96.00%
NHS ORKNEY	85.11%	87.95%	88.29%	90.14%	91.40%
NHS SHETLAND	83.50%	90.23%	92.88%	96.35%	100.00%
NHS TAYSIDE	79.55%	85.85%	87.79%	90.00%	95.90%
NHS WESTERN ISLES	60.00%	80.30%	85.19%	89.45%	90.70%
SCOTLAND		84.93%	87.73%	90.37%	

SMBG: average cost per day of blood glucose test strips per person prescribed antidiabetic drugs and/or insulins

Indicator Group Endocrine **Drug Group** Self-Monitoring of Blood Glucose (SMBG)

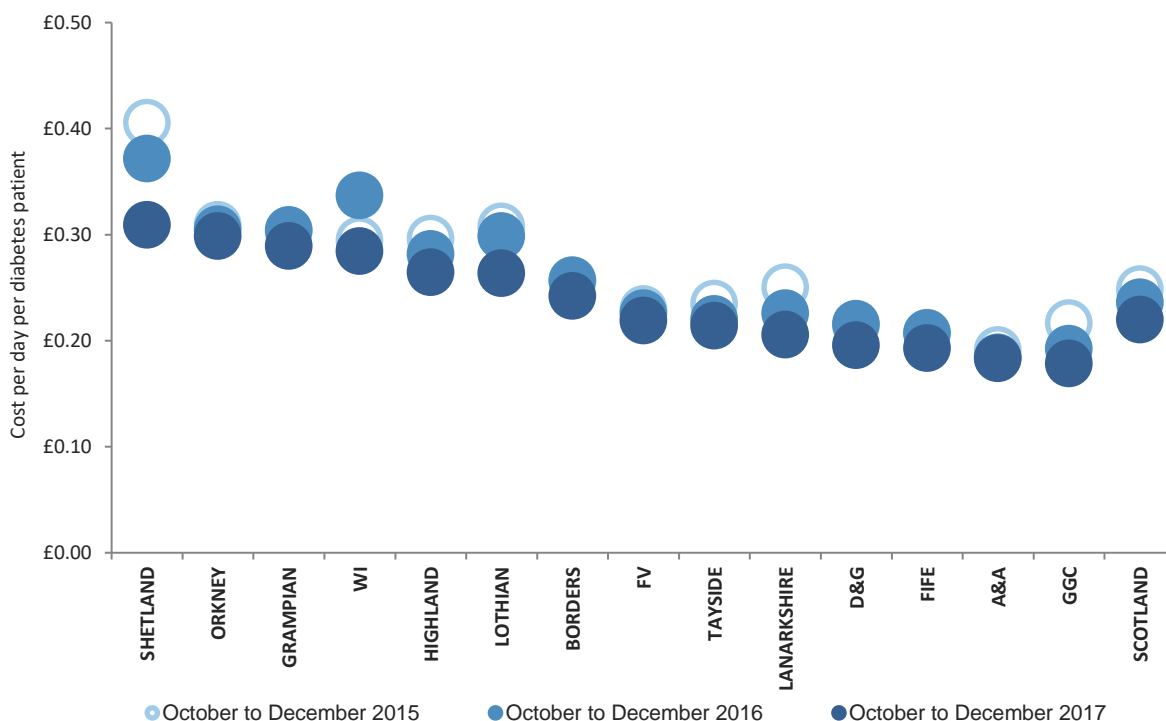
[From: [Quality Prescribing for Diabetes – a guide for improvement 2018-2021](#)]

SMBG is not generally recommended in management of type 2 diabetes. Do not routinely offer SMBG for adults with type 2 diabetes unless the person is prescribed insulin, or there is evidence of hypoglycaemic episodes, or the person is on oral medication that may increase their risk of hypoglycaemia while driving or operating machinery, or the person is pregnant, or is planning to become pregnant.

SMBG should be prescribed in line with local MCN and formulary recommendations. There are no evidence to suggest greater clinical benefit is achieved by using more expensive test strips over the less costly ones and therefore Boards should select appropriate formulary products.

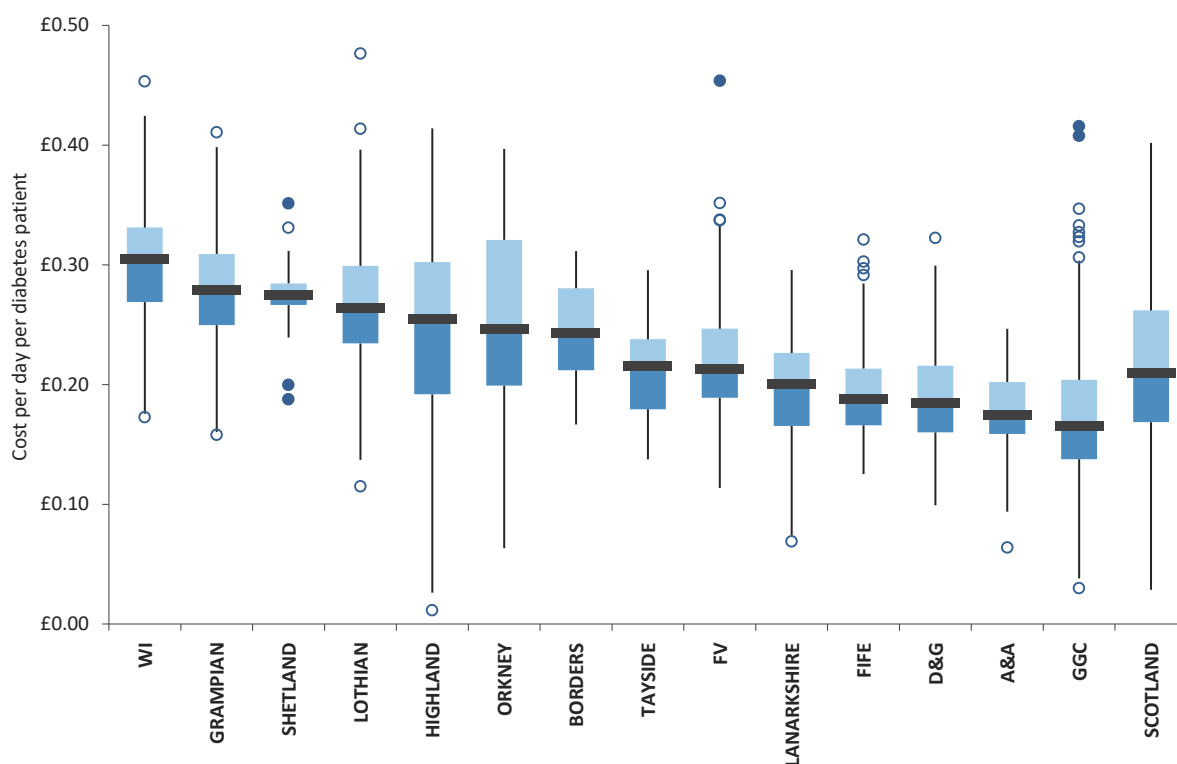
The analysis shows that the cost of blood glucose test strip prescribing has decreased year on year for the last three years across Scotland and in all the NHS Boards. On average there is nearly a 2-fold variation in prescribing between the NHS Boards (£0.18 in NHS Greater Glasgow and Clyde compared to £0.31 in NHS Shetland). The NHS Boards with the greatest variation between their GP Practices are NHS Orkney, NHS Highland, NHS Borders, NHS Lothian; they all have interquartile ranges greater than £0.06. There are 34 GP practices whose cost of prescribing of blood glucose test strip is identified as outlying within their NHS Board area.

Blood Glucose Test Strips - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: two outlier practices are not plotted; Lothian £0.68 and Grampian £0.58

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	£0.06	£0.16	£0.17	£0.20	£0.25
NHS BORDERS	£0.17	£0.21	£0.24	£0.28	£0.31
NHS DUMFRIES & GALLOWAY	£0.10	£0.16	£0.18	£0.22	£0.32
NHS FIFE	£0.13	£0.17	£0.19	£0.21	£0.32
NHS FORTH VALLEY	£0.11	£0.19	£0.21	£0.25	£0.45
NHS GRAMPIAN	£0.16	£0.25	£0.28	£0.31	£0.58
NHS GREATER GLASGOW & CLYDE	£0.03	£0.14	£0.17	£0.20	£0.42
NHS HIGHLAND	£0.01	£0.19	£0.25	£0.30	£0.41
NHS LANARKSHIRE	£0.07	£0.17	£0.20	£0.23	£0.30
NHS LOTHIAN	£0.11	£0.23	£0.26	£0.30	£0.68
NHS ORKNEY	£0.06	£0.20	£0.25	£0.32	£0.40
NHS SHETLAND	£0.19	£0.27	£0.27	£0.28	£0.35
NHS TAYSIDE	£0.14	£0.18	£0.22	£0.24	£0.30
NHS WESTERN ISLES	£0.17	£0.27	£0.30	£0.33	£0.45
SCOTLAND		£0.17	£0.21	£0.26	

Proton Pump Inhibitors: proton pump inhibitors DDDs per 1,000 List Size per day

Indicator Group Gastrointestinal **Drug Group** Proton Pump Inhibitors

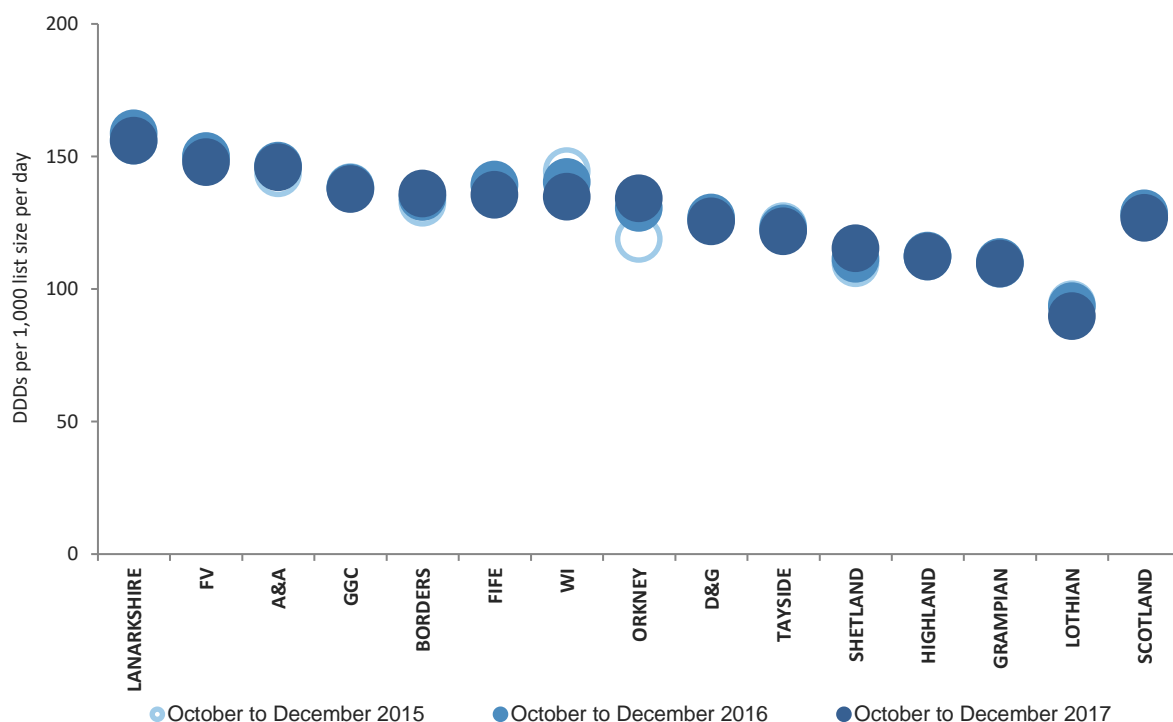
[From: [Safety of long term proton pump inhibitors \(PPIs\)](#)]

PPI use in primary care is decreasing. Guidelines recommend lifestyle advice to manage dyspepsia, review medication for possible causes of dyspepsia, prescribe low acquisition cost PPIs in preference to high acquisition cost PPIs (for the shortest duration and clearly documented indications) and offer an annual review to people needing long term management of dyspepsia. Avoid long term, frequent dose, continuous antacid therapy in functional dyspepsia (it only relieves symptoms in the short term rather than preventing them).

Review long term PPI prescribing to reduce the potential risk of *C. difficile* infection, bone fractures and to a lesser extent the risk of higher mortality in older patients, acute interstitial nephritis, community acquired pneumonia, hypomagnesaemia, vitamin B12 deficiency and rebound acid hypersecretion. There may be indications where the benefits of long term PPI use outweigh the risks (e.g. Barrett's Oesophagus, oesophageal stricture dilation, and gastroprotection for NSAID treatment).

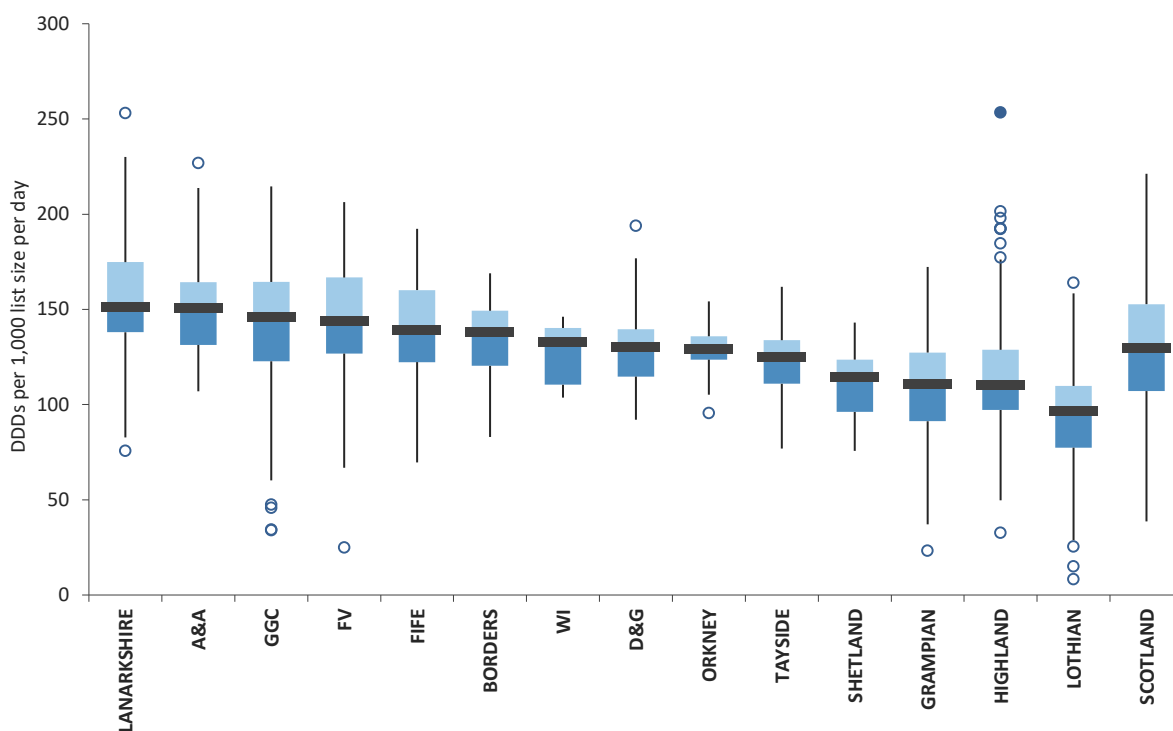
The analysis shows that proton pump inhibitor prescribing has decreased slightly in the last year across Scotland and the changes are different in each Board. There is nearly a 2-fold variation in prescribing between the Boards (89.7 DDDs per 1,000 list size per day in NHS Lothian compared to 155.9 in NHS Lanarkshire). The NHS Boards with the greatest variation between their GP Practices are NHS Greater Glasgow & Clyde, NHS Forth Valley, NHS Fife; they all have interquartile ranges greater than 36 DDDs per 1,000 list size per day. There are 24 GP practices whose prescribing of proton pump inhibitors is identified as outlying within their Board.

Proton Pump Inhibitors - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS Ayrshire & Arran	106.98	131.33	150.90	164.30	226.77
NHS Borders	83.00	120.33	138.08	149.29	168.95
NHS Dumfries & Galloway	92.06	114.70	130.09	139.54	193.88
NHS Fife	69.63	122.31	139.30	160.15	192.31
NHS Forth Valley	24.98	126.78	143.83	166.74	206.34
NHS Grampian	23.19	91.25	110.78	127.34	172.29
NHS Greater Glasgow & Clyde	34.02	122.73	146.02	164.40	214.57
NHS Highland	32.61	97.16	110.46	128.78	253.41
NHS Lanarkshire	75.68	137.99	151.37	174.81	253.07
NHS Lothian	8.21	77.38	96.79	109.79	163.90
NHS Orkney	95.44	123.61	129.17	135.88	154.18
NHS Shetland	75.69	96.12	114.51	123.63	143.07
NHS Tayside	76.92	110.90	124.71	133.81	161.85
NHS Western Isles	103.67	110.41	133.04	140.23	146.14
Scotland		107.11	129.49	152.75	

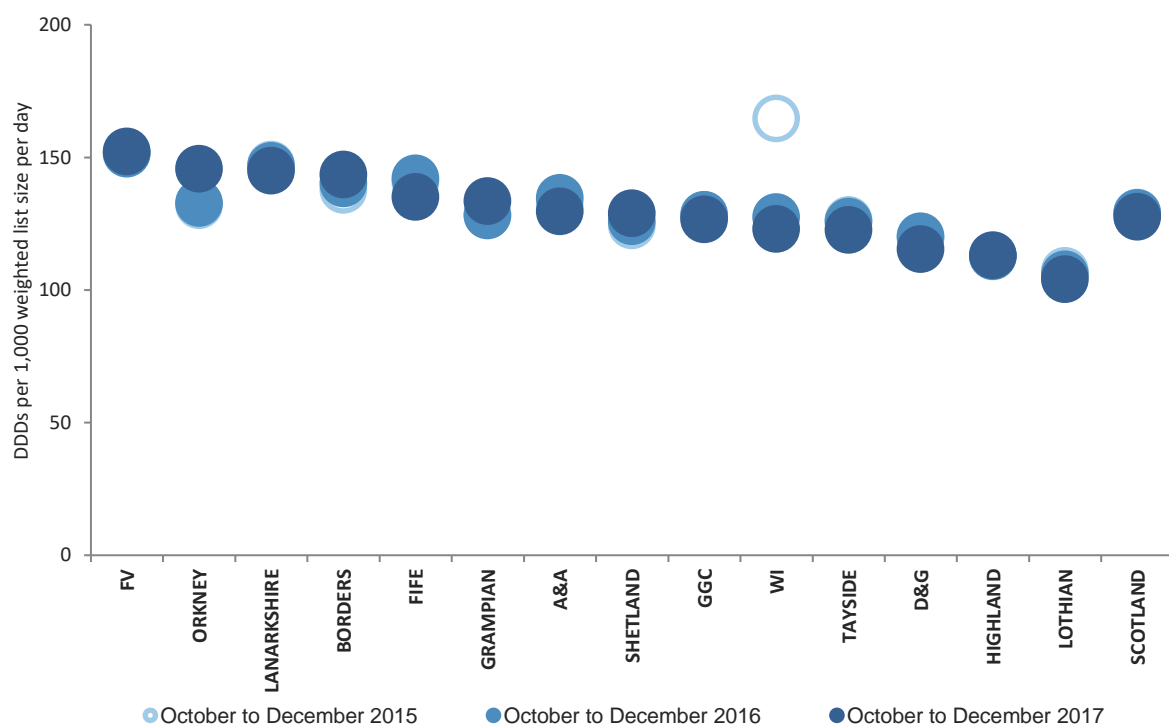
Proton Pump Inhibitors: proton pump inhibitors DDDs per 1,000 Weighted List Size per day

Indicator Group Gastrointestinal **Drug Group** Proton Pump Inhibitors

The previous measure made available using the population figures that have been weighted to account for demographic variation. These weighted populations are available within the PRISMS and are based on the GP practice component of the NRAC formula (<http://www.isdscotland.org/Health-Topics/Finance/Resource-Allocation-Formula>).

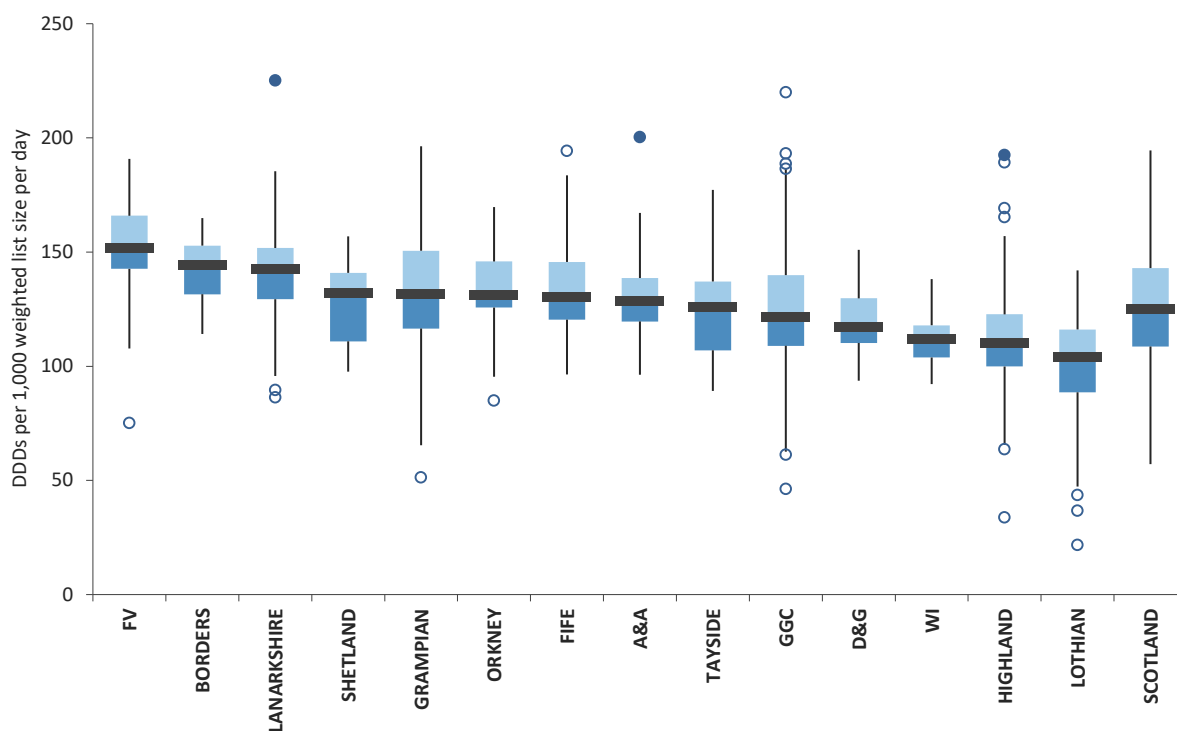
The analysis shows that the proton pump inhibitor prescribing has decreased slightly in the last year across Scotland and the changes are different in each NHS Board. On average there is nearly a 1.5 fold variation in prescribing between the NHS Boards (104.1 DDDs per 1,000 weighted list size per day in NHS Lothian compared to 152.1 in NHS Forth Valley). The NHS Boards with the greatest variation between their GP Practices are NHS Grampian, NHS Greater Glasgow & Clyde, NHS Tayside; they all have interquartile ranges greater than 30 DDDs per 1,000 weighted list size per day. There are 23 GP practices whose prescribing of proton pump inhibitors is identified as outlying within their NHS Board area.

Proton Pump Inhibitors - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	96.29	119.62	128.68	138.63	200.34
NHS BORDERS	114.13	131.55	144.51	152.82	164.88
NHS DUMFRIES & GALLOWAY	93.66	110.20	117.13	129.73	150.98
NHS FIFE	96.41	120.40	130.38	145.68	194.32
NHS FORTH VALLEY	75.18	142.65	152.00	165.90	190.80
NHS GRAMPIAN	51.23	116.51	131.79	150.59	196.33
NHS GREATER GLASGOW & CLYDE	46.21	108.97	121.72	139.91	219.89
NHS HIGHLAND	33.82	99.87	110.21	122.72	192.51
NHS LANARKSHIRE	86.29	129.36	142.70	151.77	225.14
NHS LOTHIAN	21.76	88.59	103.95	116.11	141.97
NHS ORKNEY	85.00	125.69	131.12	145.88	169.71
NHS SHETLAND	97.64	110.91	132.01	140.90	156.88
NHS TAYSIDE	89.19	106.98	125.99	137.12	177.23
NHS WESTERN ISLES	92.19	103.83	111.90	117.95	138.16
SCOTLAND		108.64	124.88	142.99	

Antibiotics: total antibiotic script items per 1,000 LS per day

Indicator Group Infection **Drug Group** Antibiotics

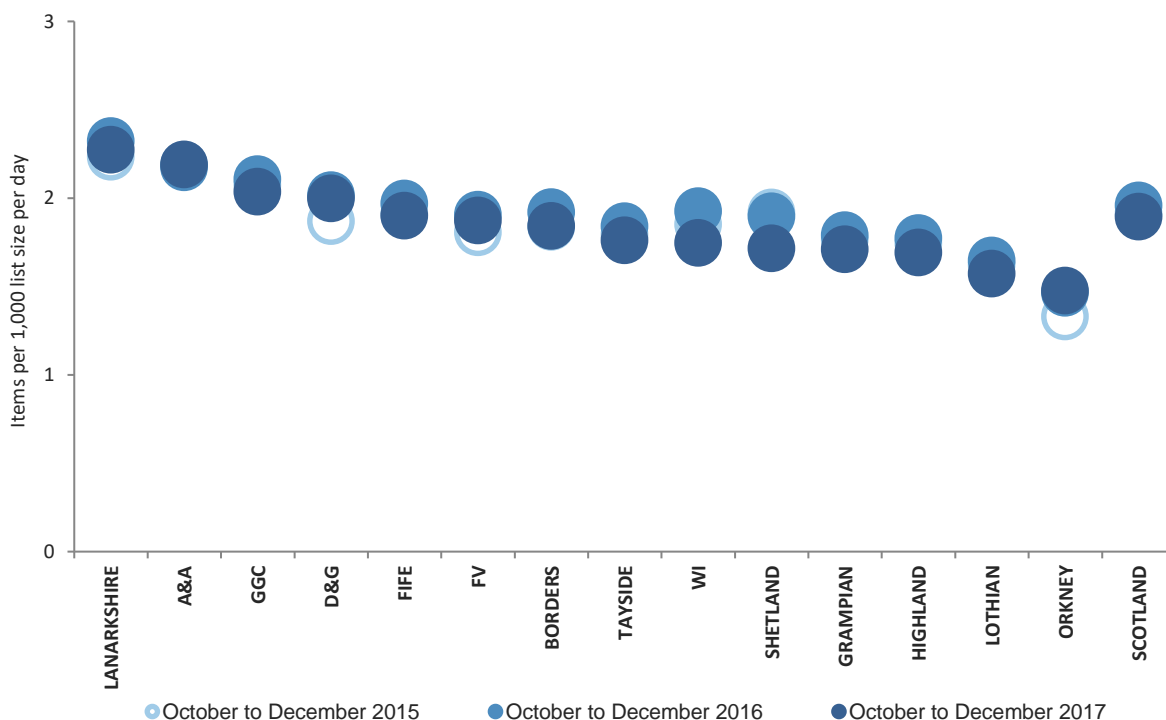
[From: [Scottish One Health Antimicrobial Use and Antimicrobial Resistance Report 2016](#)]

In Scotland, in 2016, the total use of antibiotics in humans was 26.0 defined daily doses (DDD) per 1000 population per day (DDD/1000/day); 3.0% lower than in 2012. Primary care (excluding dental use) accounted for the majority of antibiotic use (79.8%), followed by acute hospitals (13.8%), dentists (3.7%), and non-acute hospitals (2.6%).

The priority for preserving the effectiveness of antibiotics in primary care is minimisation of unnecessary antibiotic prescribing. The most common reason for prescribing antibiotics in primary care is respiratory tract infection (RTI) which accounts for around 60% of all antibiotic prescriptions; however, there is evidence that antibiotics offer no benefit to most people consulting with RTI. This focus on reducing overuse of antibiotics is consistent with the Scottish Chief Medical Officer’s vision for ‘Realising Realistic Medicine’ with its aims to reduce harm and waste, tackle unwarranted variation in care, manage clinical risk and innovate to improve.

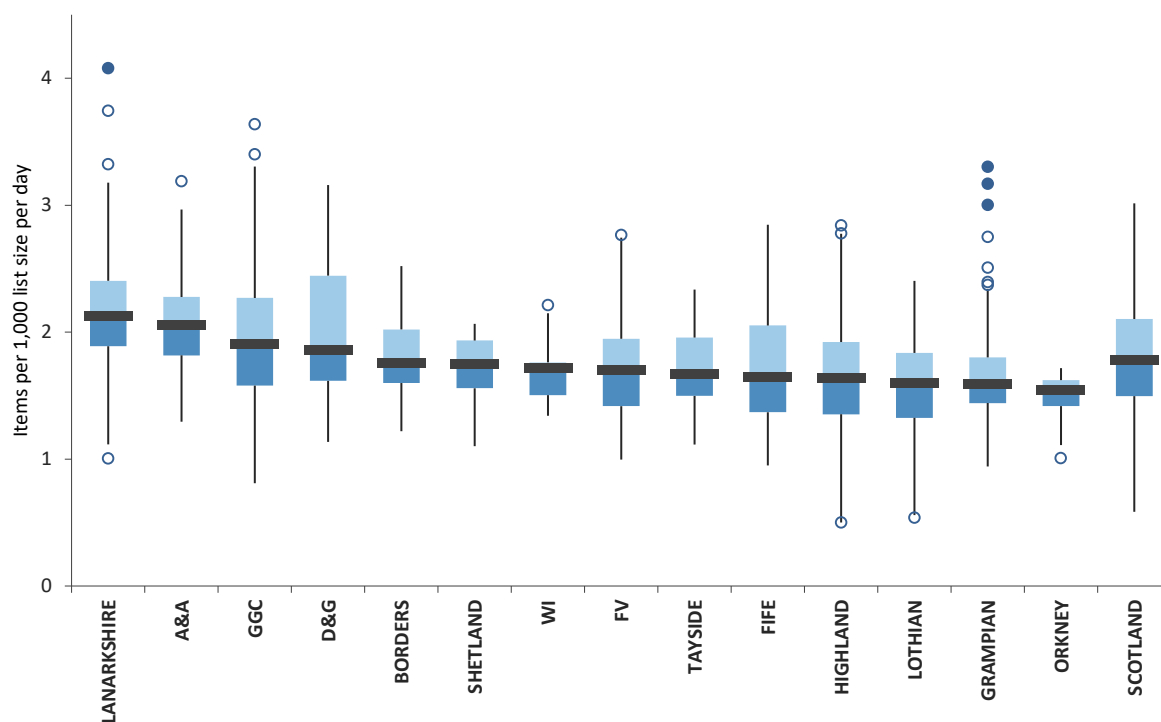
The analysis shows that the total antibiotic prescribing decreased last year across Scotland and this was different in the NHS Boards. There is a 54% variation in prescribing between the NHS Boards (1.47 script items per 1,000 list size per day in NHS Orkney compared to 2.27 in NHS Lanarkshire). The NHS Boards with the greatest variation between their GP Practices are NHS Dumfries & Galloway, NHS Greater Glasgow & Clyde, NHS Fife; they all have interquartile ranges greater than 0.6 script items per 1,000 list size per day. There are 22 GP practices whose prescribing of antibiotics is identified as outlying within their NHS Board area.

Total Antibiotics - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: one outlier practice is not plotted; Highland 5.4

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	1.29	1.82	2.06	2.28	3.19
NHS BORDERS	1.22	1.60	1.76	2.02	2.52
NHS DUMFRIES & GALLOWAY	1.14	1.62	1.86	2.45	3.16
NHS FIFE	0.95	1.37	1.65	2.05	2.85
NHS FORTH VALLEY	1.00	1.42	1.70	1.95	2.76
NHS GRAMPIAN	0.94	1.44	1.59	1.80	3.30
NHS GREATER GLASGOW & CLYDE	0.81	1.58	1.91	2.27	3.64
NHS HIGHLAND	0.50	1.35	1.64	1.92	5.40
NHS LANARKSHIRE	1.01	1.89	2.13	2.40	4.08
NHS LOTHIAN	0.54	1.33	1.60	1.84	2.40
NHS ORKNEY	1.01	1.42	1.55	1.62	1.72
NHS SHETLAND	1.10	1.56	1.74	1.93	2.07
NHS TAYSIDE	1.11	1.50	1.67	1.96	2.34
NHS WESTERN ISLES	1.34	1.50	1.71	1.76	2.21
SCOTLAND	1.50	1.78	2.10		

Antibiotics: 4C antibiotics script items per 1,000 LS per 100 days

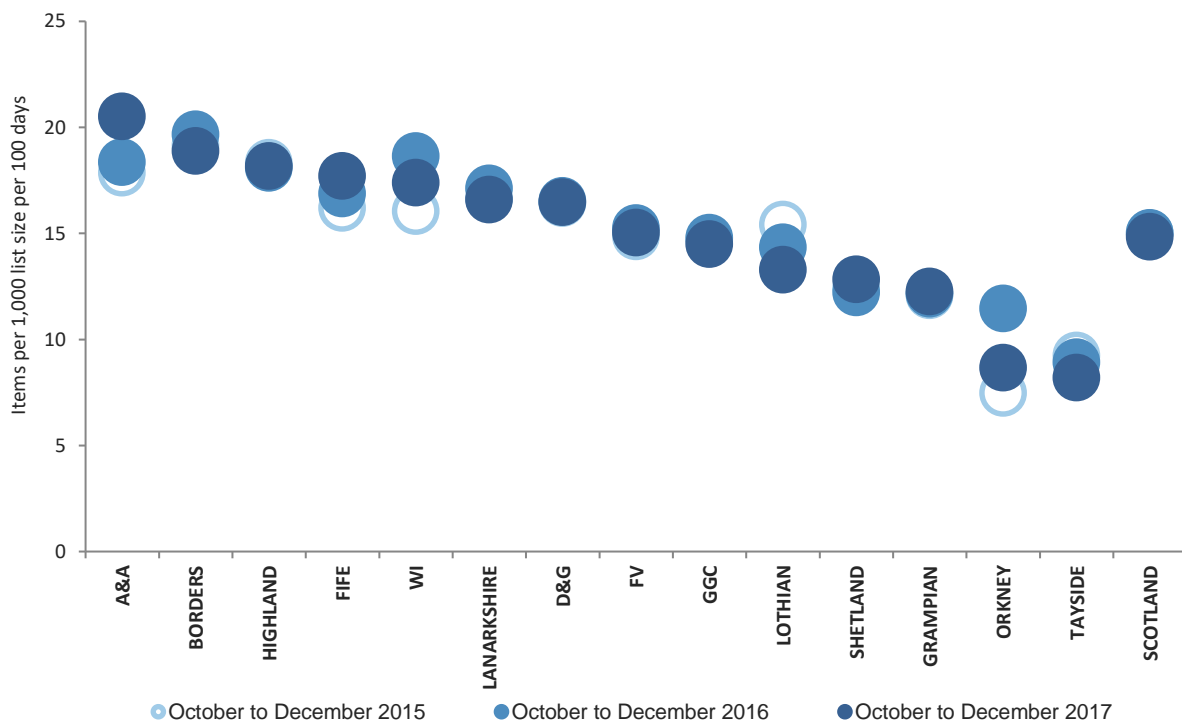
Indicator Group	Infection	Drug Group	Antibiotics (4C)
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[From: [Scottish One Health Antimicrobial Use and Antimicrobial Resistance Report 2016](#)]

Reducing the use of specific broad spectrum antibiotics (cephalosporins, co-amoxiclav and fluoroquinolones) is an important element of primary care antimicrobial stewardship. In 2016, these broad spectrum antibiotics accounted for 8.0% of total antibiotic use similar to 2015 (8.1%). Use of cephalosporins (7.3%) and fluroroquinolones (1.9%) appear lower in 2016 compared with 2015. For the first time since 2007, there was an increase in co-amoxiclav use (2.2%). A recent study described the association between antibiotic use in primary care and community associated *Clostridium difficile* infection (CA-CDI). Individuals with ≥ 29 DDD (an approximation for ≥ 29 days of treatment) of high-risk antibiotics (cephalosporins, clindamycin, coamoxiclav or fluoroquinolones) in the previous six months had more than seventeen times the risk of CA-CDI compared with no antibiotic exposure (OR 17.9). Elevated CA-CDI risk following exposure to high-risk antibiotics was greatest in the first month and continued for four to six months.¹

The analysis shows that the 4C antibiotic prescribing has not changed in the last three years across Scotland, but there are differences between the NHS Boards. On average there is more than a 2-fold variation in prescribing between the NHS Boards (8.18 items per 1,000 list size per 100 days in NHS Tayside compared to 20.51 in NHS Ayrshire and Arran). The NHS Boards with the greatest variation between their GP Practices are NHS Western Isles, NHS Highland, NHS Lanarkshire; they all have interquartile ranges greater than 8 items per 1,000 list size per 100 days. There are 46 GP practices whose prescribing of 4C antibiotics is identified as outlying within their NHS Board area.

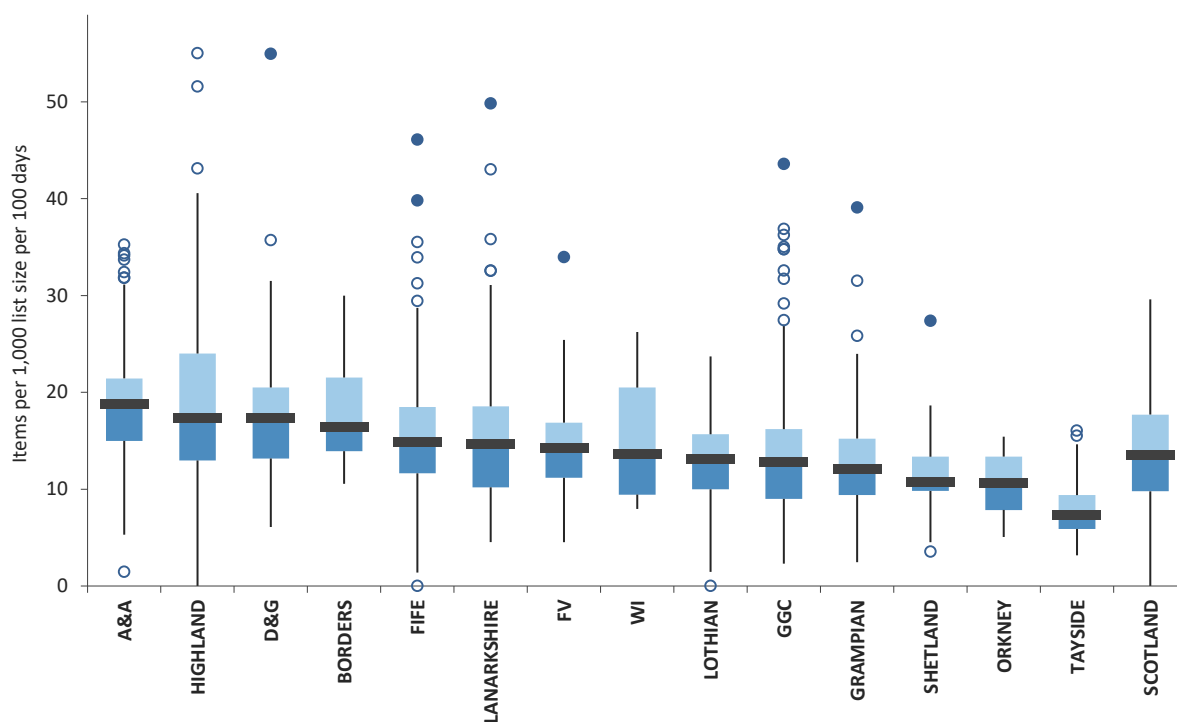
4C antibiotics - NHS Board Trend



¹ Kavanagh K, Pan J, Marwick C, et al. Cumulative and temporal associations between antimicrobial prescribing and community-associated *Clostridium difficile* infection: population-based case-control study using administrative data. *J Antimicrob Chemother* 2017;72:1193-201.

The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: two outlier practices are not plotted; NHS Highland 71.76, 59.24

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS Ayrshire & Arran	1.46	14.99	18.78	21.45	35.23
NHS Borders	10.56	13.93	16.39	21.53	29.99
NHS Dumfries & Galloway	6.10	13.17	17.32	20.51	54.96
NHS Fife	0.00	11.64	14.90	18.47	46.09
NHS Forth Valley	4.53	11.18	14.22	16.87	33.97
NHS Grampian	2.46	9.40	12.04	15.23	39.09
NHS Greater Glasgow & Clyde	2.31	9.00	12.79	16.20	43.58
NHS Highland	0.00	12.97	17.33	24.01	71.76
NHS Lanarkshire	4.54	10.19	14.68	18.55	49.84
NHS Lothian	0.00	9.99	13.09	15.67	23.71
NHS Orkney	5.07	7.86	10.66	13.37	15.42
NHS Shetland	3.55	9.82	10.78	13.35	27.38
NHS Tayside	3.17	5.89	7.39	9.39	16.04
NHS Western Isles	7.96	9.44	13.59	20.49	26.24
Scotland		9.78	13.56	17.71	

Valproate: females aged 13 to up to 45 prescribed valproate as a % of all females dispensed valproate

Indicator Group MHRA Warning **Adverse Effect** Developmental disability or birth defects

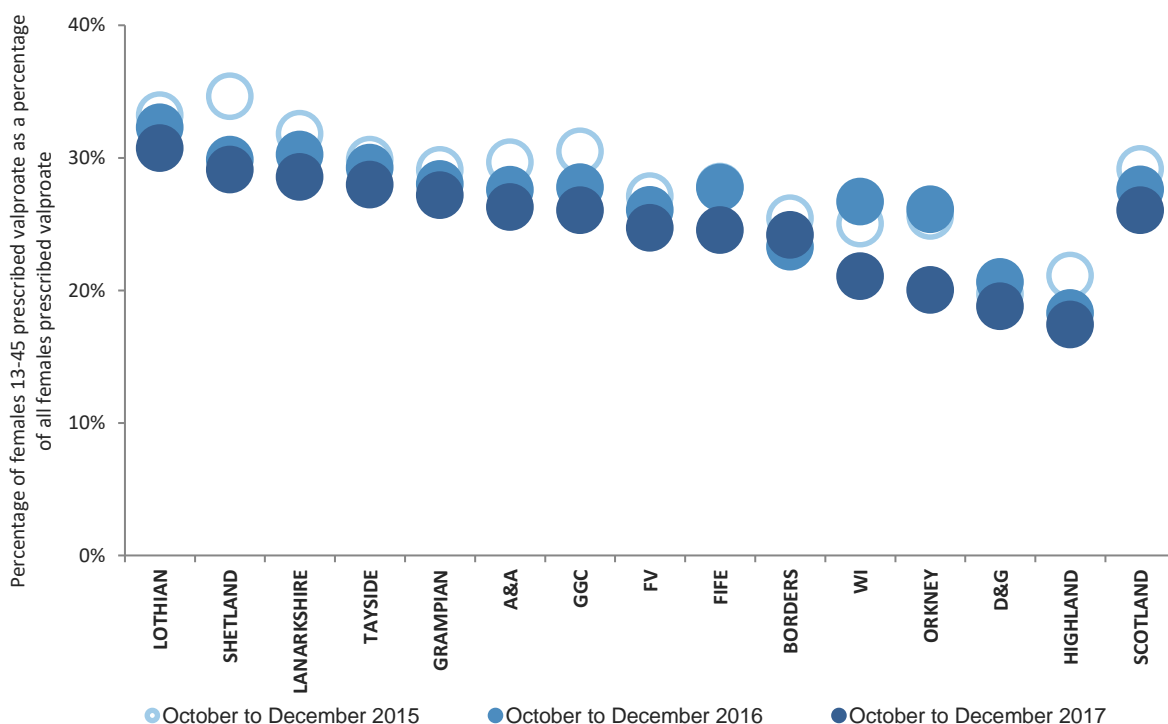
[From: [MHRA Drug Safety Update](#)]

MHRA advice for healthcare professionals highlights that valproate is contraindicated when prescribed to females of childbearing potential unless a Pregnancy Prevention Programme is in place. Valproate medicines must not be used in women and girls of childbearing potential unless the conditions of the Pregnancy Prevention Programme are met (see [MHRA website](#)) and only if other treatments are ineffective or not tolerated, as judged by an experienced specialist

GPs must identify and recall all women and girls who may be of childbearing potential, provide the Patient Guide and check they have been reviewed by a specialist in the last year and are on highly effective contraception.

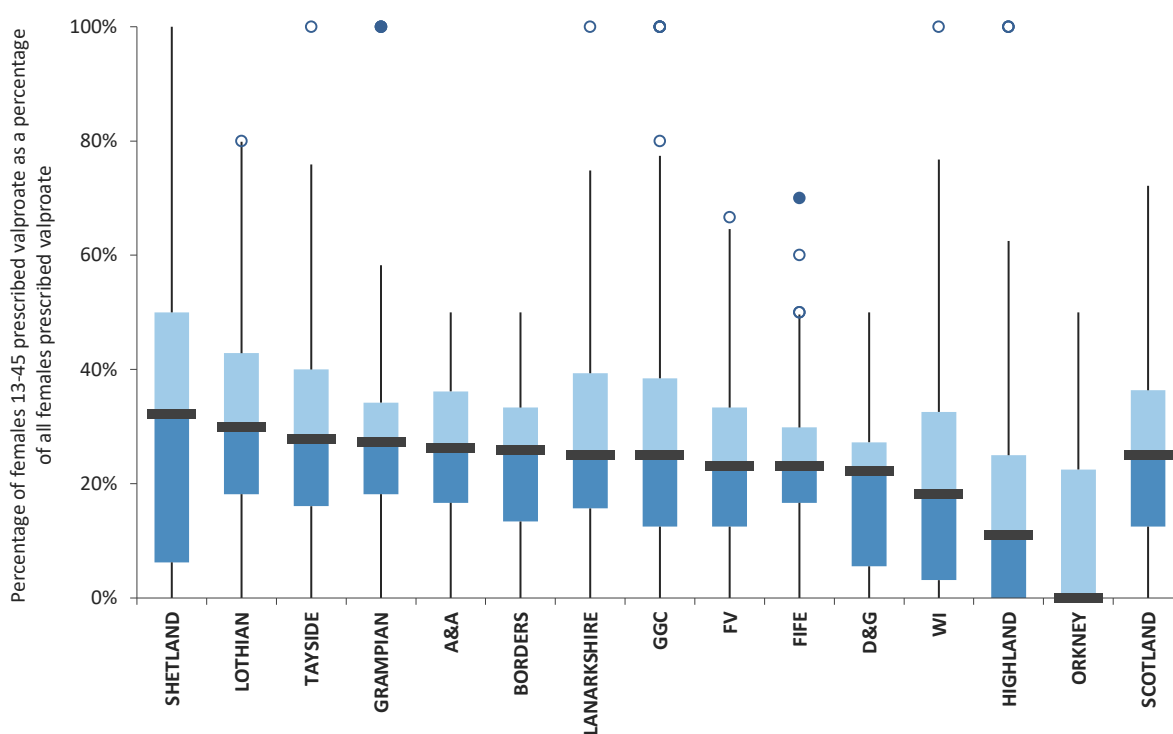
The analysis shows that the valproate prescribing in females of childbearing age has decreased year on year for the last three years across Scotland and in all the NHS Boards. On average there is nearly a 2-fold variation in prescribing between the NHS Boards (17.4% of females aged 13-45 prescribed valproate as a percentage of all females prescribed valproate in NHS Highland compared to 30.7% in NHS Lothian). The NHS Boards with the greatest variation between their GP Practices are NHS Shetland, NHS Western Isles, NHS Greater Glasgow & Clyde; they all have interquartile ranges greater than 25%. There are 21 GP practices whose prescribing of valproate is identified as outlying within their NHS Board area.

Valproate in Females of Childbearing Age - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	0.00%	16.67%	26.32%	36.18%	50.00%
NHS BORDERS	0.00%	13.39%	25.93%	33.33%	50.00%
NHS DUMFRIES & GALLOWAY	0.00%	5.56%	22.22%	27.27%	50.00%
NHS FIFE	0.00%	16.67%	23.08%	29.85%	70.00%
NHS FORTH VALLEY	0.00%	12.50%	23.08%	33.33%	66.67%
NHS GRAMPIAN	0.00%	18.18%	27.27%	34.21%	100.00%
NHS GREATER GLASGOW & CLYDE	0.00%	12.50%	25.00%	38.46%	100.00%
NHS HIGHLAND	0.00%	0.00%	11.11%	25.00%	100.00%
NHS LANARKSHIRE	0.00%	15.69%	25.00%	39.35%	100.00%
NHS LOTHIAN	0.00%	18.18%	30.00%	42.86%	80.00%
NHS ORKNEY	0.00%	0.00%	0.00%	22.50%	50.00%
NHS SHETLAND	0.00%	6.25%	32.21%	50.00%	100.00%
NHS TAYSIDE	0.00%	16.07%	27.92%	40.00%	100.00%
NHS WESTERN ISLES	0.00%	3.13%	18.18%	32.58%	100.00%
SCOTLAND		12.50%	25.00%	36.36%	

NSAIDs including Cox-2 inhibitors: NSAIDs (including COX-2 inhibitors) DDDs per 1,000 List Size per day

Indicator Group Musculoskeletal Drug Group NSAIDs

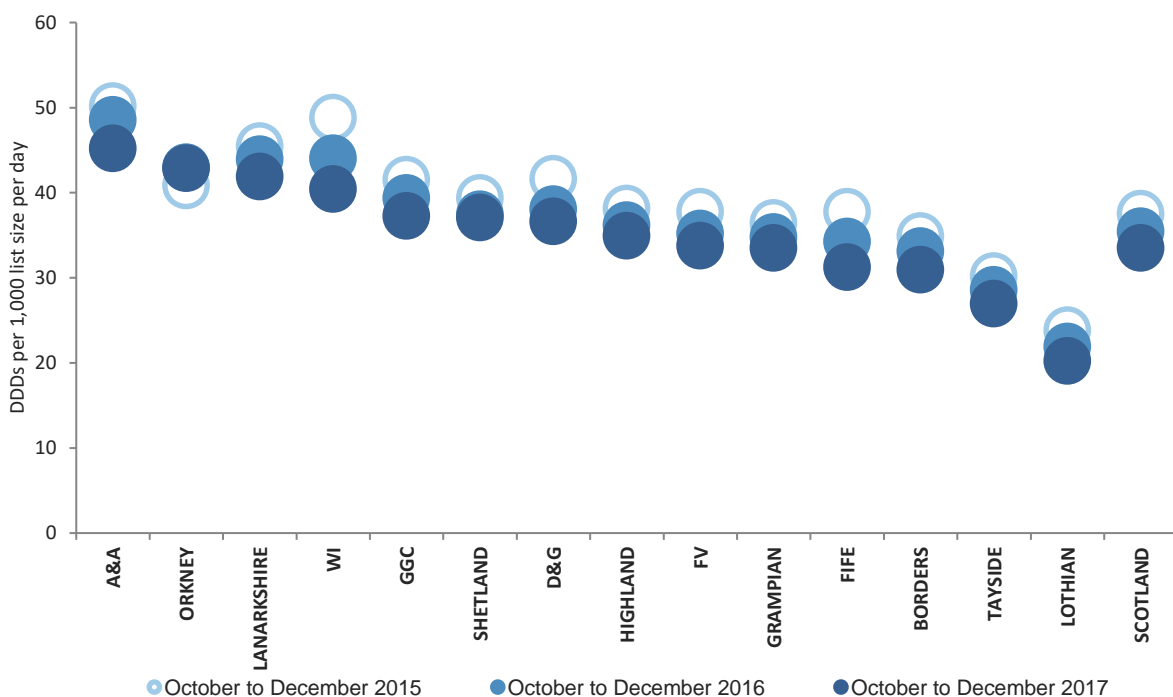
[From: [NICE Non-steroidal anti-inflammatory drugs Key therapeutic topic - KTT13](#)]

There are long-standing and well-recognised gastrointestinal and renal safety concerns with all non-steroidal anti-inflammatory drugs (NSAIDs). There is also substantial evidence confirming an increased risk of cardiovascular events with many NSAIDs, including COX-2 inhibitors and some traditional NSAIDs such as diclofenac and high-dose ibuprofen. In the June 2015 edition of Drug Safety Update, the MHRA gave prescribing advice on the use of all NSAIDs.

- Review the appropriateness of non-steroidal anti-inflammatory drug (NSAID) prescribing widely and on a routine basis, especially in people who are at higher risk of gastrointestinal, renal and cardiovascular morbidity and mortality (for example, older people).
- If an NSAID is needed, use ibuprofen ($\leq 1,200$ mg a day) or naproxen ($\leq 1,000$ mg a day). Use the lowest effective dose and the shortest duration of treatment necessary to control symptoms.
- Co-prescribe a PPI with NSAIDs for people who have osteoarthritis or rheumatoid arthritis, and think about the use of gastroprotective treatment when prescribing NSAIDs for low back pain, axial spondyloarthritis, psoriatic arthritis and other peripheral spondyloarthritis.

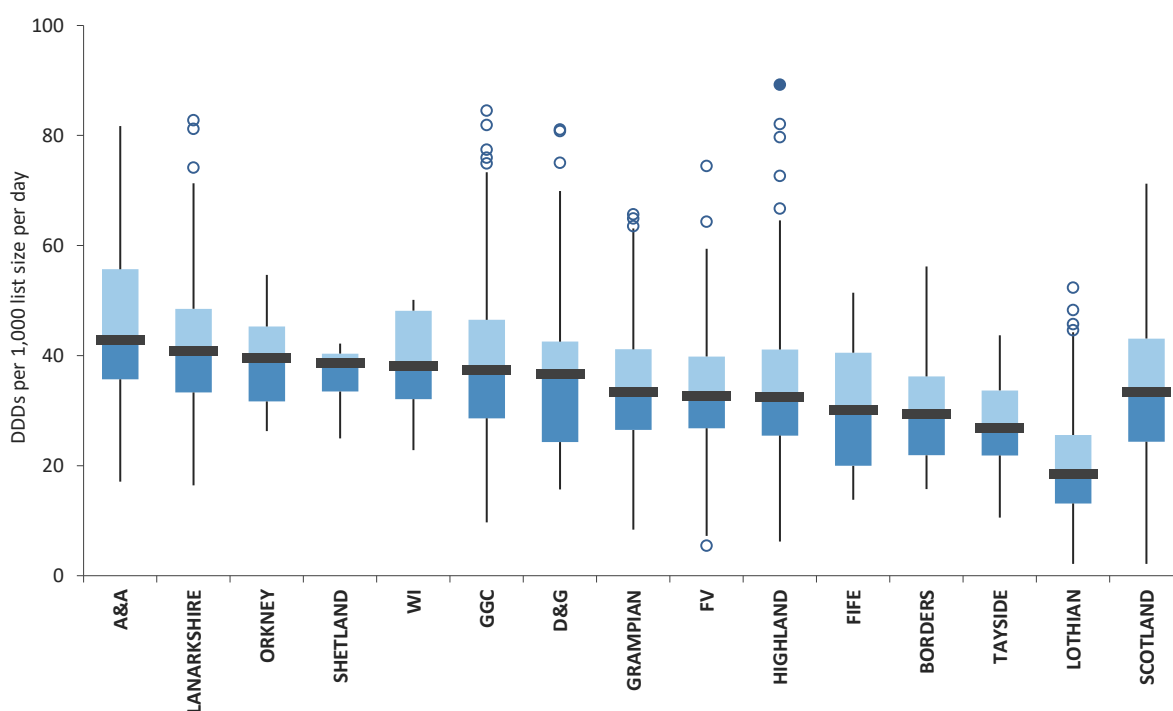
The analysis shows that the NSAID prescribing has decreased year on year for the last three years across Scotland and in most of the NHS Boards. On average there is at least a 2-fold variation in prescribing between the NHS Boards (20.2 DDDs per 1,000 list size per day in NHS Lothian compared to 45.2 in NHS Ayrshire and Arran). The NHS Boards with the greatest variation between their GP Practices are NHS Fife, NHS Ayrshire & Arran, NHS Dumfries & Galloway; they all have interquartile ranges greater than 18. There are 26 GP practices whose prescribing of NSAIDs (including Cox-2 inhibitors) is identified as outlying within their NHS Board area.

NSAIDs including Cox-2 inhibitors - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	17.10	35.69	42.84	55.70	81.72
NHS BORDERS	15.75	21.88	29.50	36.22	56.20
NHS DUMFRIES & GALLOWAY	15.68	24.29	36.76	42.54	81.09
NHS FIFE	13.81	19.96	30.19	40.53	51.43
NHS FORTH VALLEY	5.43	26.80	32.73	39.85	74.42
NHS GRAMPIAN	8.38	26.48	33.39	41.14	65.66
NHS GREATER GLASGOW & CLYDE	9.69	28.62	37.34	46.50	84.52
NHS HIGHLAND	6.21	25.47	32.47	41.11	89.21
NHS LANARKSHIRE	16.42	33.31	40.87	48.52	82.79
NHS LOTHIAN	2.15	13.13	18.40	25.58	52.32
NHS ORKNEY	26.28	31.67	39.51	45.30	54.67
NHS SHETLAND	24.96	33.47	38.63	40.37	42.19
NHS TAYSIDE	10.56	21.85	26.83	33.68	43.69
NHS WESTERN ISLES	22.82	32.09	38.17	48.17	50.13
SCOTLAND		24.35	33.45	43.11	

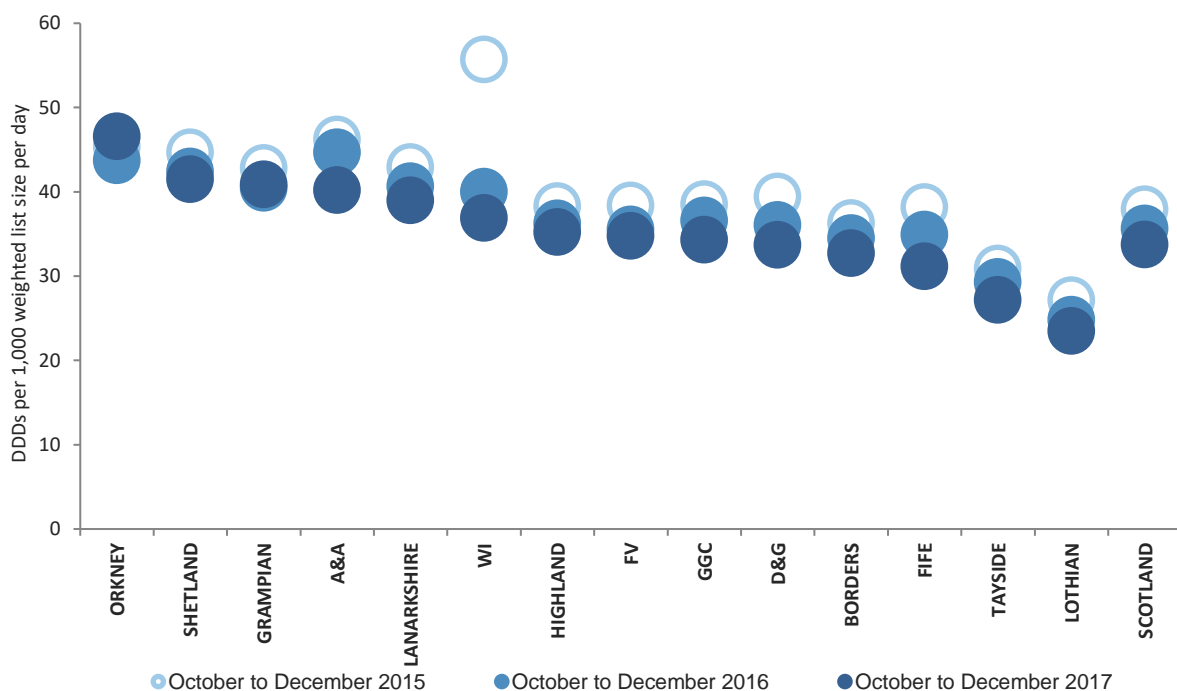
NSAIDs including Cox-2 inhibitors: NSAID (including Cox-2 inhibitors) DDDs per 1,000 weighted list size per day

Indicator Group Musculoskeletal **Drug Group** NSAIDs

The previous measure made available using the population figures that have been weighted to account for demographic variation. These weighted populations are available within the PRISMS and are based on the GP practice component of the NRAC formula (<http://www.isdscotland.org/Health-Topics/Finance/Resource-Allocation-Formula>).

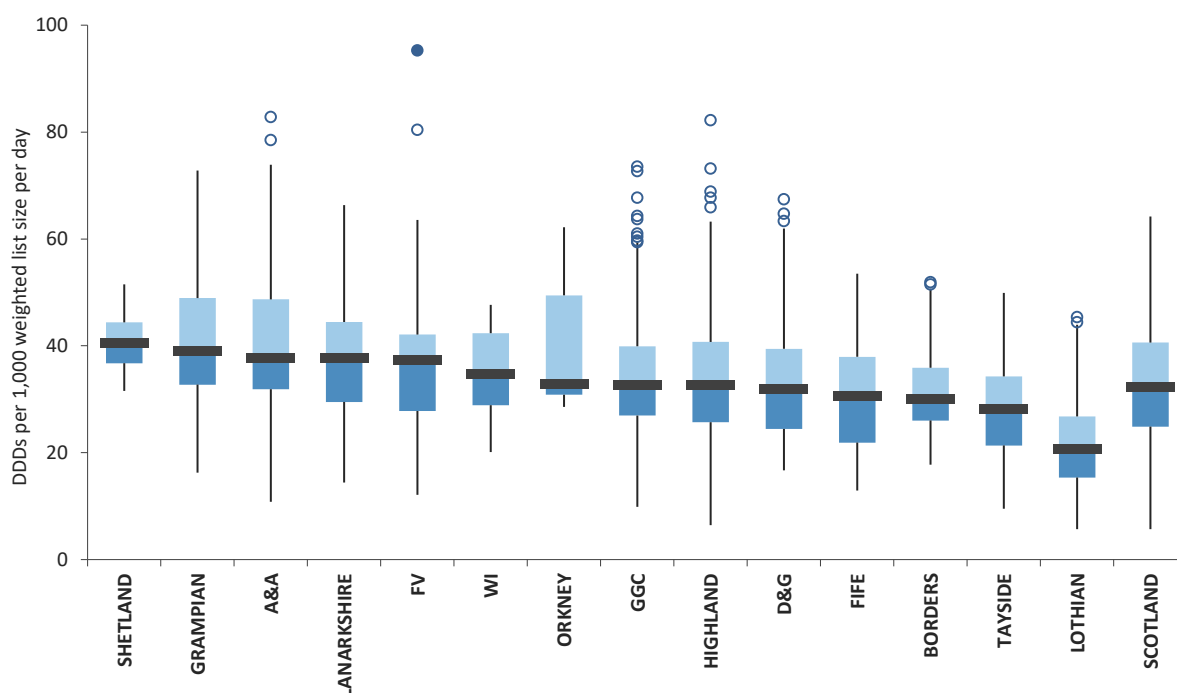
The analysis shows that the NSAID prescribing has decreased year on year for the last three years across Scotland and in most of the NHS Boards. On average there is a 2-fold variation in prescribing between the NHS Boards (23.5 DDDs per 1,000 weighted list size per day in NHS Lothian compared to 46.6 in NHS Orkney). The NHS Boards with the greatest variation between their GP Practices are NHS Orkney, NHS Ayrshire & Arran, NHS Grampian, NHS Fife; they all have interquartile ranges greater than 15. There are 25 GP practices whose prescribing of NSAIDs (including Cox-2 inhibitors) is identified as outlying within their NHS Board area.

NSAIDs including Cox-2 inhibitors - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	10.82	31.88	37.79	48.68	82.81
NHS BORDERS	17.76	26.03	29.94	35.90	51.90
NHS DUMFRIES & GALLOWAY	16.70	24.45	31.99	39.45	67.42
NHS FIFE	12.92	21.90	30.70	37.95	53.49
NHS FORTH VALLEY	12.12	27.80	37.27	42.10	95.27
NHS GRAMPIAN	16.27	32.74	39.07	48.93	72.80
NHS GREATER GLASGOW & CLYDE	9.87	26.95	32.70	39.92	73.50
NHS HIGHLAND	6.44	25.71	32.63	40.72	82.20
NHS LANARKSHIRE	14.42	29.50	37.76	44.46	66.33
NHS LOTHIAN	5.69	15.36	20.63	26.79	45.37
NHS ORKNEY	28.57	30.85	32.86	49.45	62.18
NHS SHETLAND	31.56	36.75	40.48	44.39	51.50
NHS TAYSIDE	9.52	21.36	28.19	34.28	49.90
NHS WESTERN ISLES	20.12	28.89	34.82	42.36	47.66
SCOTLAND		24.88	32.21	40.61	

Acute Kidney Injury: number of people aged ≥65 years co-prescribed a NSAID and an ACE inhibitor/angiotensin receptor blocker and a diuretic as a percentage of all people aged ≥65 years prescribed an ACE inhibitor/angiotensin receptor blocker and a diuretic

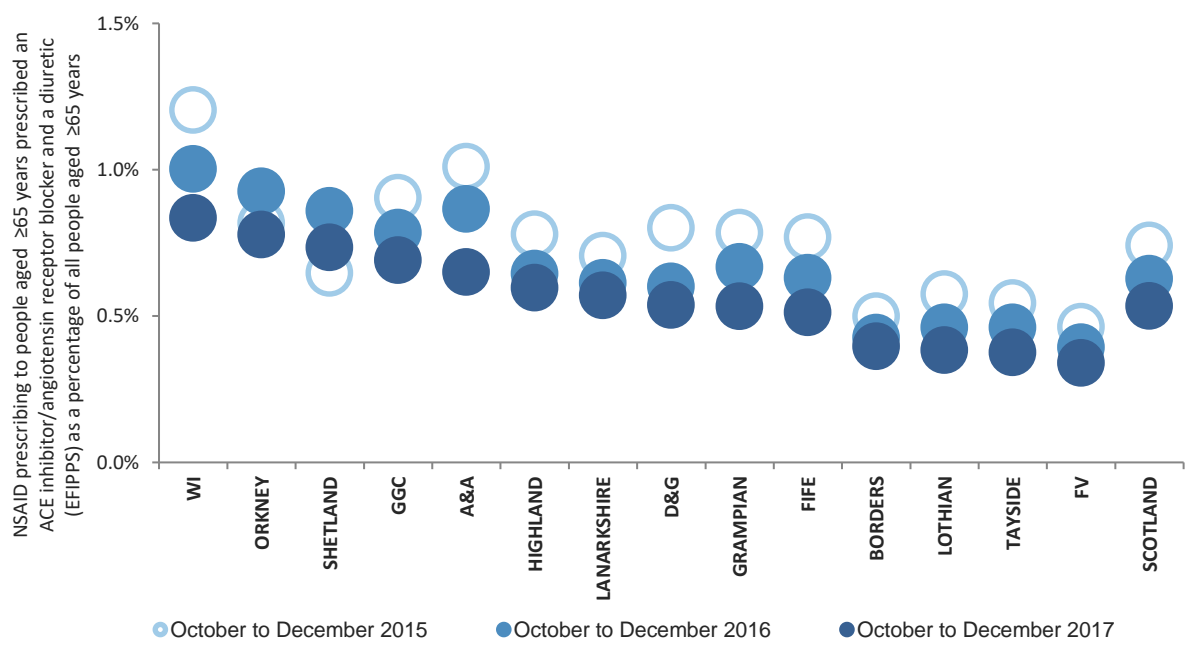
Indicator Group Polypharmacy **Adverse Effect** Acute Kidney Injury

[From: [Polypharmacy Realistic Prescribing 2018](#)]

This is one of the Polypharmacy related National Therapeutic Indicators (named Additional Prescribing Measures on page 74 of the guidance document). Fourteen of the drug utilisation measures that can be used for both *Case Finding* and *Clinical Outcomes* are National Therapeutic Indicators. In Scotland the National Therapeutic Indicators provide prescribing measures, which are closely related to the high-risk medication *Case Finding* indicators in the Polypharmacy Guidance, and may be used to monitor *Clinical Outcomes*. A clear advantage of taking this approach is that they are mostly already built into the GP practice prescribing support tools and national datasets.

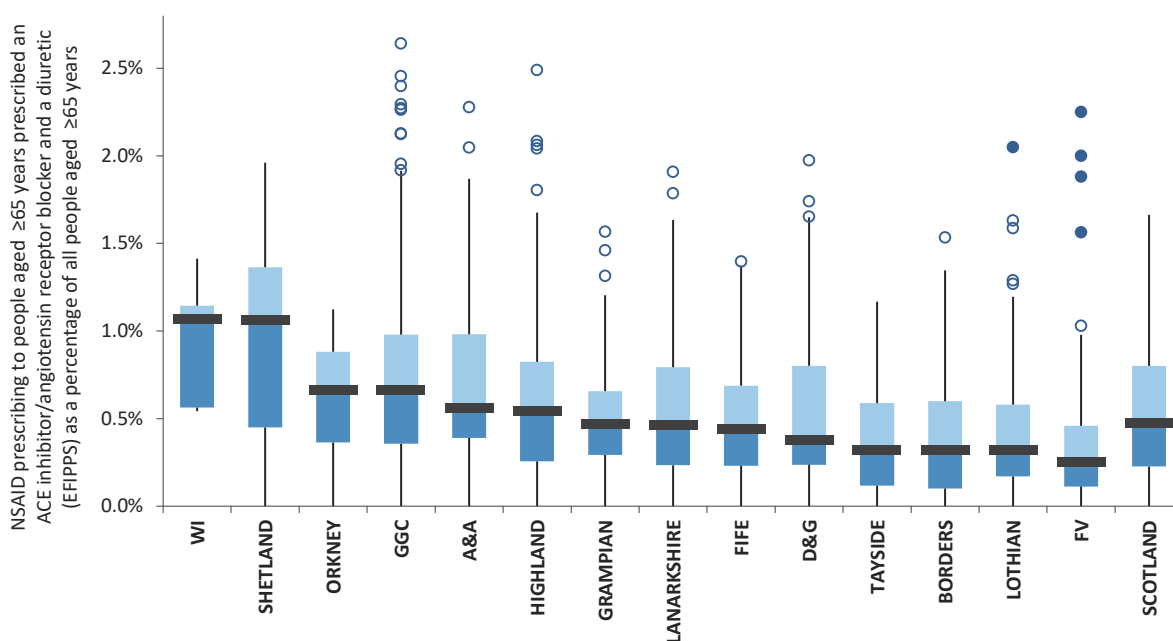
The analysis shows that the *triple whammy* prescribing has decreased year on year for the last three years across Scotland and in most the NHS Boards. On average there is at least a 2-fold variation in prescribing between the NHS Boards (0.34% in NHS Forth Valley compared to 0.83% in NHS Western Isles). The NHS Boards with the greatest variation between their GP Practices are NHS Shetland and NHS Greater Glasgow and Clyde; they all have interquartile ranges greater than 0.6%. There are 43 GP practices whose prescribing of the *triple whammy* combination is identified as outlying within their NHS Board area.

Triple whammy - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: five outlier practices are not plotted; NHS Highland 3.86% 2.89%, NHS Greater Glasgow & Clyde 3.30% 3.21%, NHS Ayrshire & Arran 3.07%

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	0.00%	0.39%	0.56%	0.98%	3.07%
NHS BORDERS	0.00%	0.10%	0.32%	0.60%	1.53%
NHS DUMFRIES & GALLOWAY	0.00%	0.24%	0.38%	0.80%	1.97%
NHS FIFE	0.00%	0.23%	0.44%	0.69%	1.40%
NHS FORTH VALLEY	0.00%	0.11%	0.25%	0.46%	2.25%
NHS GRAMPIAN	0.00%	0.29%	0.47%	0.66%	1.57%
NHS GREATER GLASGOW & CLYDE	0.00%	0.36%	0.66%	0.98%	3.30%
NHS HIGHLAND	0.00%	0.26%	0.54%	0.82%	3.86%
NHS LANARKSHIRE	0.00%	0.23%	0.46%	0.79%	1.91%
NHS LOTHIAN	0.00%	0.17%	0.32%	0.58%	2.05%
NHS ORKNEY	0.00%	0.36%	0.66%	0.88%	1.12%
NHS SHETLAND	0.00%	0.45%	1.06%	1.36%	1.96%
NHS TAYSIDE	0.00%	0.12%	0.32%	0.59%	1.17%
NHS WESTERN ISLES	0.54%	0.56%	1.07%	1.14%	1.41%
SCOTLAND		0.23%	0.47%	0.80%	

Antibiotics: Number of people prescribed >4 prescriptions for antibiotics per annum as a percentage of all people prescribed antibiotics

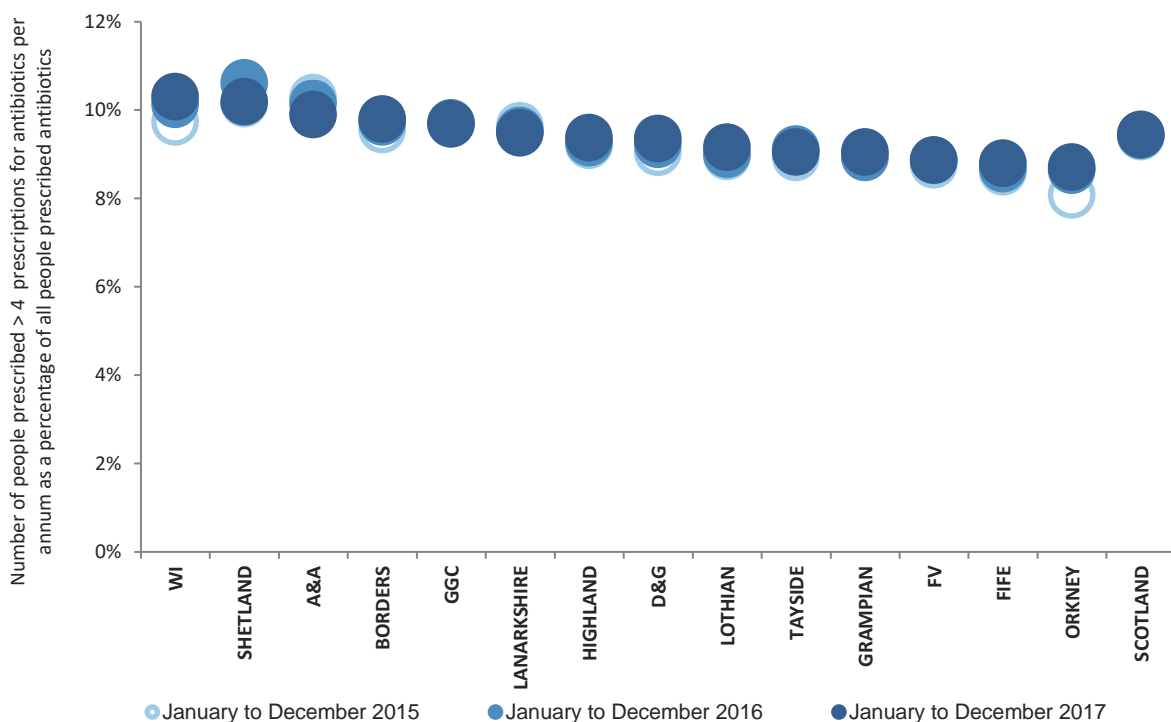
Indicator Group Polypharmacy **Drug Group** Antibiotics (repeated courses)

[From: [Polypharmacy Realistic Prescribing 2018](#)]

This is one of the Polypharmacy related National Therapeutic Indicators (named Additional Prescribing Measures on page 74 of the guidance document). Fourteen of the drug utilisation measures that can be used for both *Case Finding* and *Clinical Outcomes* are National Therapeutic Indicators. In Scotland the National Therapeutic Indicators provide prescribing measures, which are closely related to the high-risk medication *Case Finding* indicators in the Polypharmacy Guidance, and may be used to monitor *Clinical Outcomes*. A clear advantage of taking this approach is that they are mostly already built into the GP practice prescribing support tools and national datasets.

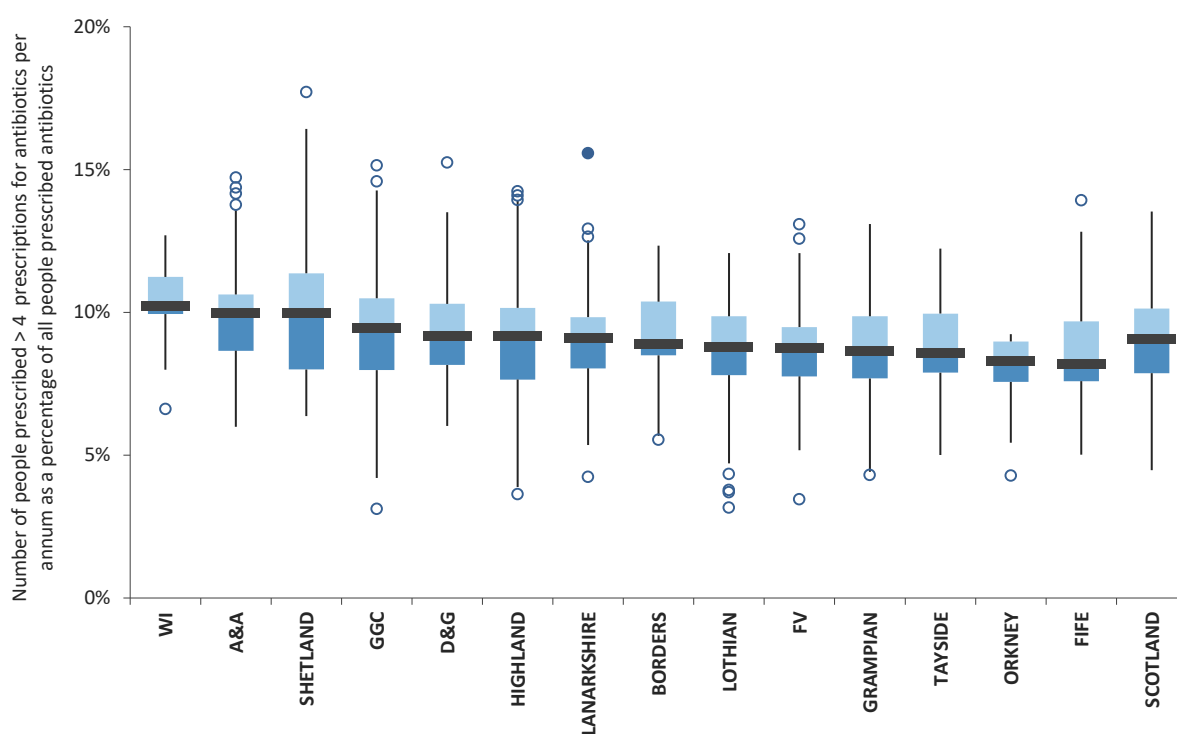
The analysis shows that the repeated antibiotic prescribing is unchanged year on year for the last three years across Scotland and this is different in the NHS Boards. On average there is little variation in prescribing between the NHS Boards (8.7% of all people prescribed antibiotics were prescribed >4 prescriptions per annum in NHS Orkney compared to 10.3% in NHS Western Isles). The NHS Boards with the greatest variation between their GP Practices are NHS Shetland, NHS Greater Glasgow & Clyde, NHS Highland; they all have interquartile ranges greater than 2%. There are 29 GP practices whose prescribing of repeated antibiotics is identified as outlying within their NHS Board area.

Antibiotics (repeated courses) - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	5.99%	8.66%	9.97%	10.63%	14.72%
NHS BORDERS	5.54%	8.50%	8.90%	10.37%	12.34%
NHS DUMFRIES & GALLOWAY	6.02%	8.16%	9.18%	10.30%	15.25%
NHS FIFE	5.02%	7.59%	8.19%	9.68%	13.92%
NHS FORTH VALLEY	3.46%	7.76%	8.76%	9.49%	13.08%
NHS GRAMPIAN	4.31%	7.69%	8.63%	9.86%	13.09%
NHS GREATER GLASGOW & CLYDE	3.12%	7.98%	9.44%	10.49%	15.14%
NHS HIGHLAND	3.64%	7.65%	9.16%	10.16%	14.23%
NHS LANARKSHIRE	4.24%	8.04%	9.09%	9.83%	15.56%
NHS LOTHIAN	3.16%	7.80%	8.80%	9.86%	12.08%
NHS ORKNEY	4.29%	7.56%	8.31%	8.98%	9.24%
NHS SHETLAND	6.37%	8.00%	9.97%	11.37%	17.71%
NHS TAYSIDE	5.01%	7.89%	8.56%	9.96%	12.23%
NHS WESTERN ISLES	6.61%	9.94%	10.22%	11.24%	12.70%
SCOTLAND		7.87%	9.07%	10.14%	

Antibiotics: number of 3-day course of acute UTI antibiotics prescribed to women as a percentage of all acute UTI antibiotic courses prescribed to women

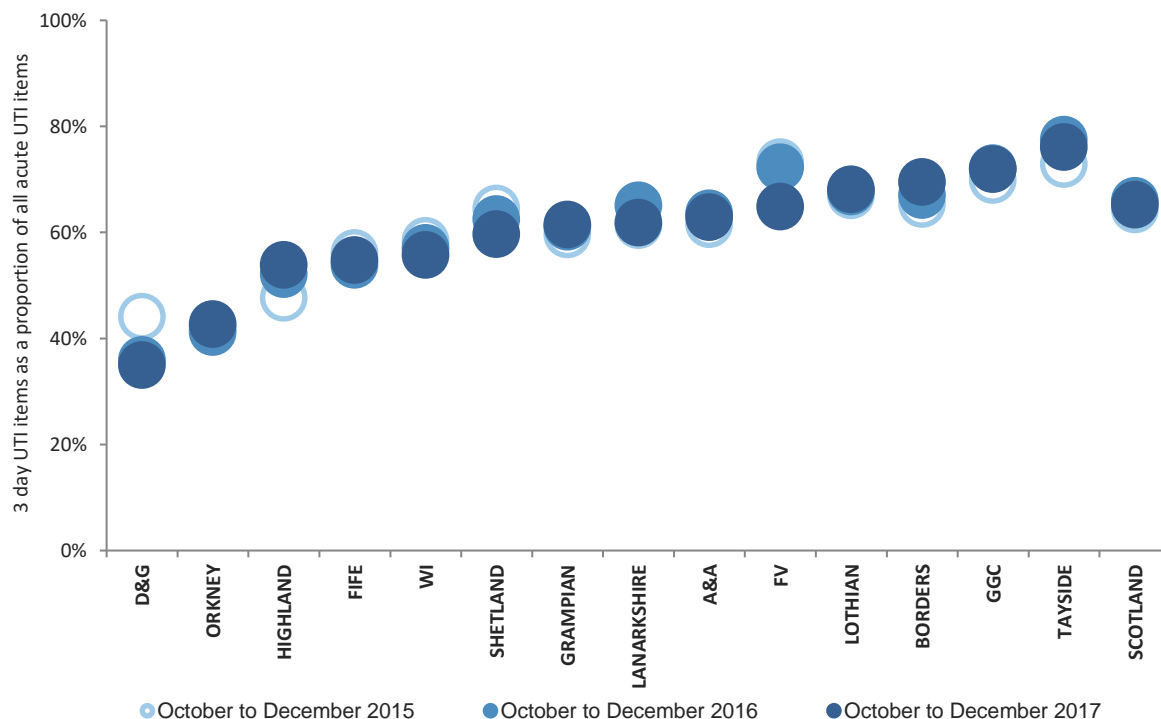
Indicator Group Polypharmacy **Drug Group** Antibiotics (UTI)

[From: [Polypharmacy Realistic Prescribing 2018](#)]

This is one of the Polypharmacy related National Therapeutic Indicators (named Additional Prescribing Measures on page 74 of the guidance document). Fourteen of the drug utilisation measures that can be used for both *Case Finding* and *Clinical Outcomes* are National Therapeutic Indicators. In Scotland the National Therapeutic Indicators provide prescribing measures, which are closely related to the high-risk medication *Case Finding* indicators in the Polypharmacy Guidance, and may be used to monitor *Clinical Outcomes*. A clear advantage of taking this approach is that they are mostly already built into the GP practice prescribing support tools and national datasets.

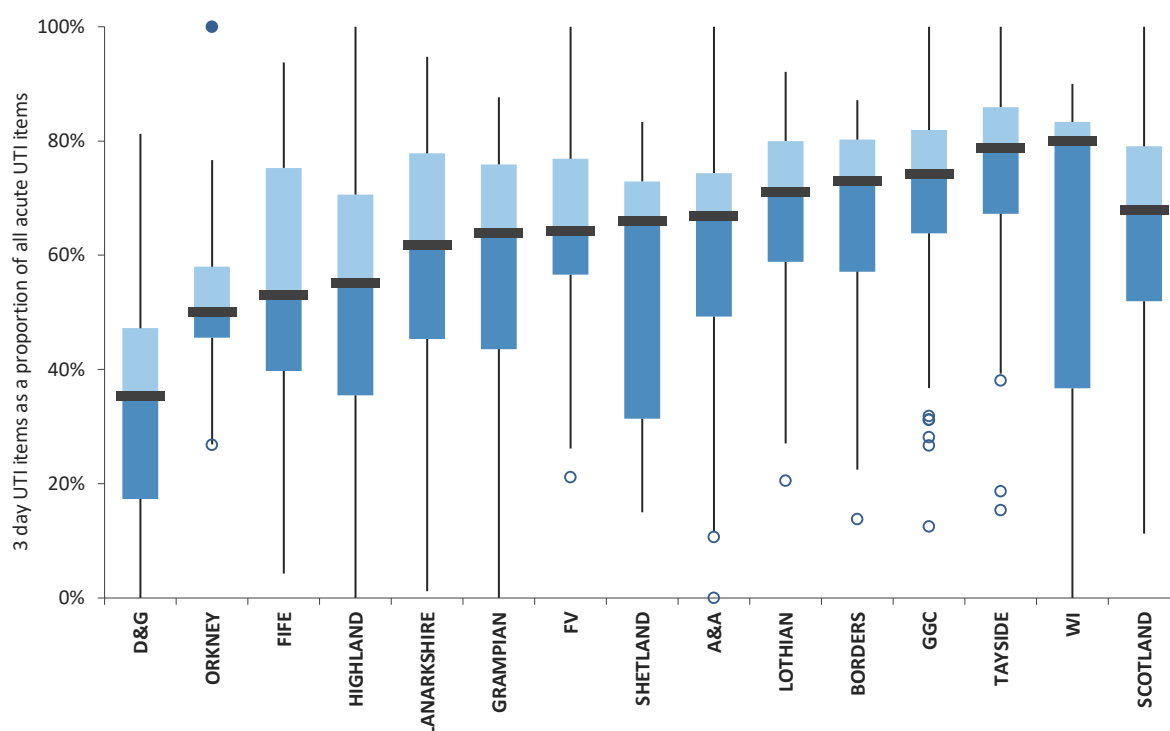
The analysis shows that the UTI antibiotic prescribing has slightly improved for the last year across Scotland and this is different in the NHS Boards. On average there is 2-fold variation in prescribing between the NHS Boards (76.1% of all women prescribed UTI antibiotics were prescribed 3-day courses in NHS Tayside compared to 34.9% in NHS Dumfries & Galloway). The NHS Boards with the greatest variation between their GP Practices are NHS Western Isles, NHS Shetland, NHS Fife, NHS Highland; they all have interquartile ranges greater than 33%. There are 16 GP practices whose prescribing of repeated antibiotics is identified as outlying within their NHS Board area.

Antibiotics (UTI) - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	0.00%	49.26%	66.81%	74.40%	100.00%
NHS BORDERS	13.79%	57.14%	72.92%	80.24%	87.14%
NHS DUMFRIES & GALLOWAY	0.00%	17.35%	35.29%	47.22%	81.25%
NHS FIFE	4.29%	39.76%	52.94%	75.29%	93.75%
NHS FORTH VALLEY	21.15%	56.59%	64.23%	76.88%	100.00%
NHS GRAMPIAN	0.00%	43.57%	63.86%	75.89%	87.65%
NHS GREATER GLASGOW & CLYDE	12.50%	63.85%	74.25%	81.91%	100.00%
NHS HIGHLAND	0.00%	35.47%	55.23%	70.62%	100.00%
NHS LANARKSHIRE	1.19%	45.34%	61.84%	77.85%	94.74%
NHS LOTHIAN	20.55%	58.82%	71.02%	80.00%	92.11%
NHS ORKNEY	26.79%	45.55%	50.00%	57.99%	100.00%
NHS SHETLAND	15.00%	31.40%	66.09%	72.93%	83.33%
NHS TAYSIDE	15.38%	67.27%	78.77%	85.94%	100.00%
NHS WESTERN ISLES	0.00%	36.70%	80.00%	83.33%	90.00%
SCOTLAND		51.94%	68.00%	79.06%	

Polypharmacy in Diabetes: number of people prescribed three or more categories of diabetes medication as a percentage of all people prescribed an antidiabetic drug

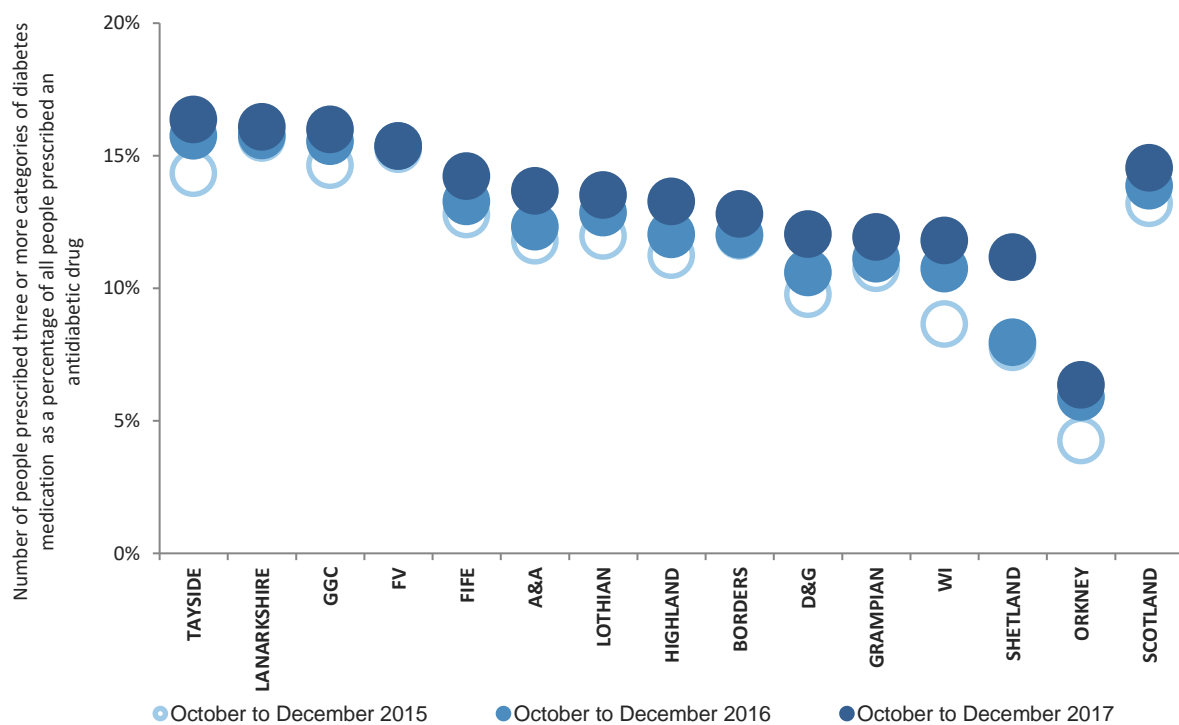
Indicator Group Polypharmacy **Drug Group** Anti-diabetic Drugs

[From: [Polypharmacy Realistic Prescribing 2018](#)]

This is one of the Polypharmacy related National Therapeutic Indicators (named Additional Prescribing Measures on page 74 of the guidance document). Fourteen of the drug utilisation measures that can be used for both *Case Finding* and *Clinical Outcomes* are National Therapeutic Indicators. In Scotland the National Therapeutic Indicators provide prescribing measures, which are closely related to the high-risk medication *Case Finding* indicators in the Polypharmacy Guidance, and may be used to monitor *Clinical Outcomes*. A clear advantage of taking this approach is that they are mostly already built into the GP practice prescribing support tools and national datasets. The data does not include insulins.

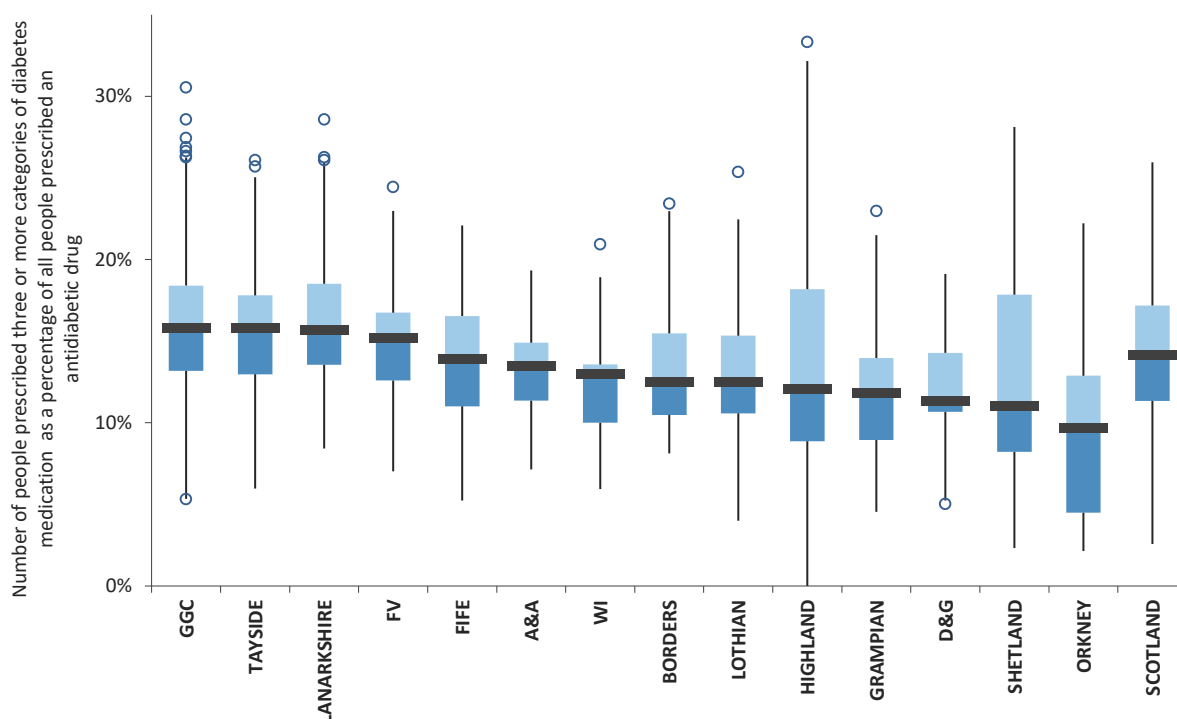
The analysis shows that polypharmacy prescribing in diabetes has increased year in year for the last three years across Scotland and in most of the Boards. There is an almost 3-fold variation in prescribing between the Boards (6.3% of all people prescribed an antidiabetic drug were prescribed three or more categories of diabetes medication in NHS Orkney compared to 16.4% in NHS Tayside). The Boards with the greatest variation between GP Practices are NHS Shetland, NHS Highland, NHS Orkney, NHS Fife; they all have interquartile ranges greater than 5.5%. There are 21 GP practices whose polypharmacy prescribing in diabetes is identified as outlying within their Board.

Antidiabetic Drugs - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: one outlier practice is not plotted; NHS Highland 42.9%

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	7.14%	11.35%	13.46%	14.90%	19.33%
NHS BORDERS	8.13%	10.48%	12.50%	15.48%	23.42%
NHS DUMFRIES & GALLOWAY	5.03%	10.67%	11.36%	14.29%	19.12%
NHS FIFE	5.24%	11.01%	13.90%	16.54%	22.09%
NHS FORTH VALLEY	7.03%	12.59%	15.20%	16.75%	24.44%
NHS GRAMPIAN	4.55%	8.95%	11.81%	13.97%	22.97%
NHS GREATER GLASGOW & CLYDE	5.32%	13.18%	15.84%	18.41%	30.55%
NHS HIGHLAND	0.00%	8.87%	12.06%	18.19%	42.86%
NHS LANARKSHIRE	8.42%	13.56%	15.66%	18.52%	28.57%
NHS LOTHIAN	4.00%	10.58%	12.50%	15.33%	25.37%
NHS ORKNEY	2.14%	4.49%	9.68%	12.88%	22.22%
NHS SHETLAND	2.33%	8.22%	11.05%	17.85%	28.13%
NHS TAYSIDE	5.97%	12.98%	15.79%	17.80%	26.09%
NHS WESTERN ISLES	5.94%	10.00%	12.96%	13.57%	20.93%
SCOTLAND		11.34%	14.16%	17.19%	

Antipsychotics: number of people aged ≥75 years prescribed an antipsychotic as a percentage of all people aged ≥75 years

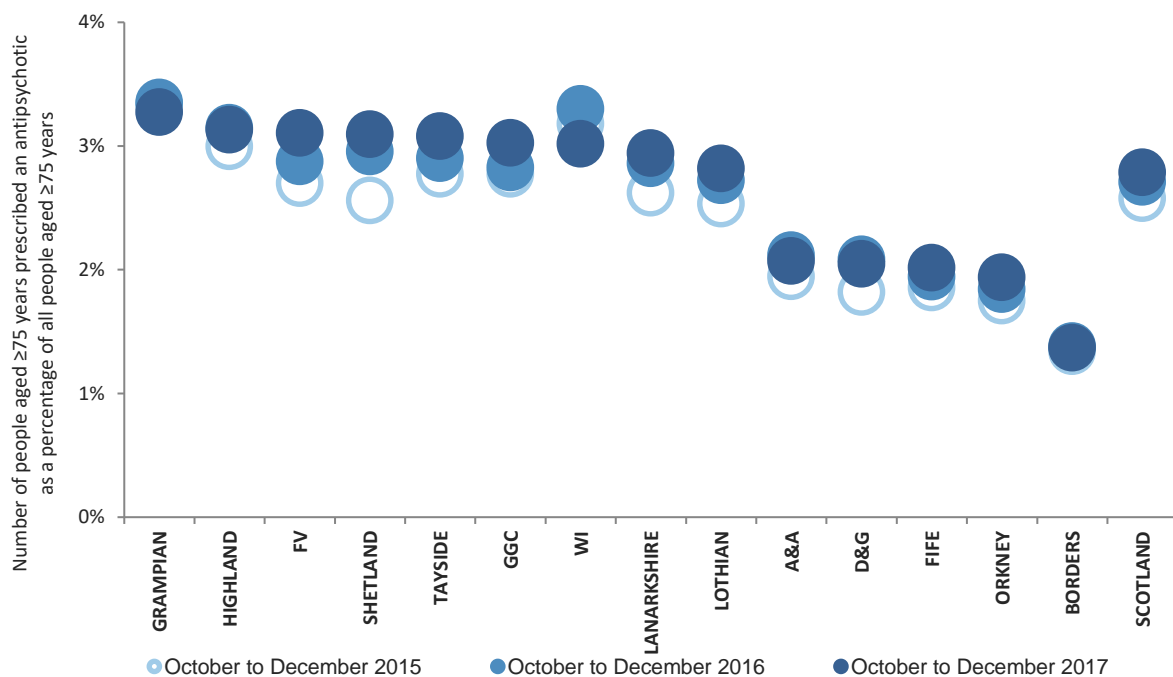
Indicator Group Polypharmacy **Drug Group** Antipsychotics

[From: [Polypharmacy Realistic Prescribing 2018](#)]

This is one of the Polypharmacy related National Therapeutic Indicators (named Additional Prescribing Measures on page 74 of the guidance document). Fourteen of the drug utilisation measures that can be used for both *Case Finding* and *Clinical Outcomes* are National Therapeutic Indicators. In Scotland the National Therapeutic Indicators provide prescribing measures, which are closely related to the high-risk medication *Case Finding* indicators in the Polypharmacy Guidance, and may be used to monitor *Clinical Outcomes*. A clear advantage of taking this approach is that they are mostly already built into the GP practice prescribing support tools and national datasets.

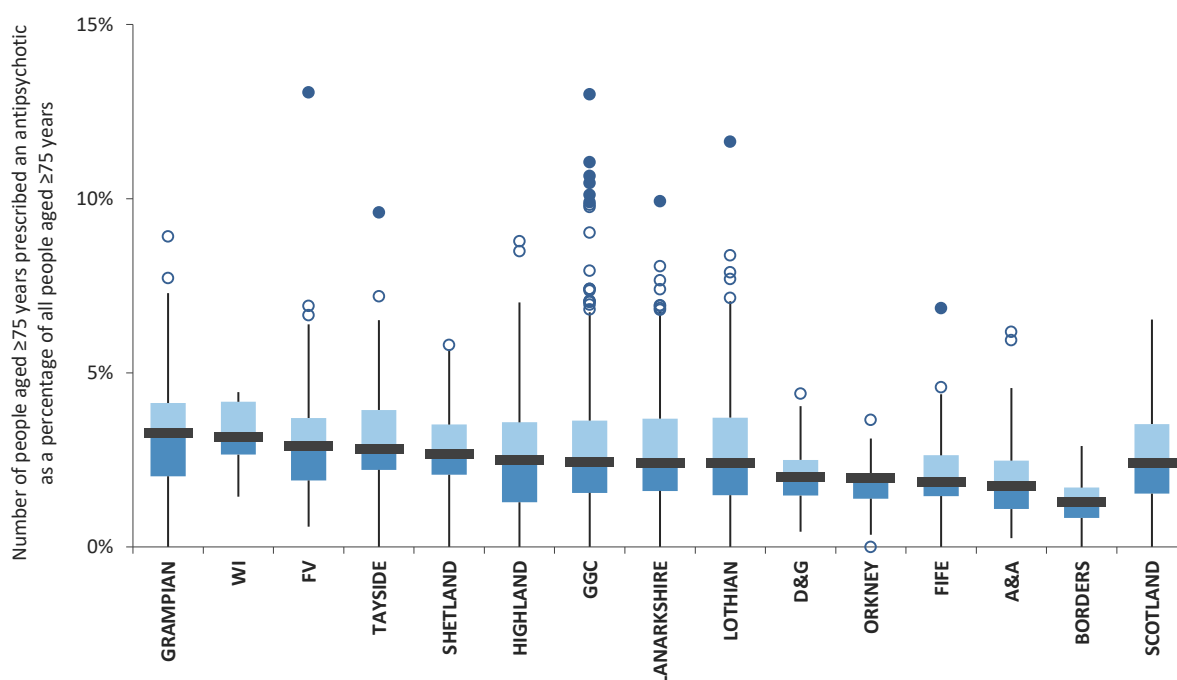
The analysis shows that prescribing of antipsychotics in older people has increased year in year for the last three years across Scotland and in most of the NHS Boards. On average there is at least a 2-fold variation in prescribing between the NHS Boards (1.4% of all people aged ≥75 years were prescribed an antipsychotic in NHS Borders compared to 3.3% in NHS Grampian). The NHS Boards with the greatest variation between their GP Practices are NHS Highland, NHS Lothian, NHS Grampian, NHS Greater Glasgow & Clyde, NHS Lanarkshire; they all have interquartile ranges greater than 2%. There are 51 GP practices whose prescribing is identified as outlying within their NHS Board area.

Antipsychotics - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: three outlier practices are not plotted; NHS Greater Glasgow and Clyde 19.9% 16.0%, NHS Grampian 17.4%

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	0.25%	1.09%	1.75%	2.48%	6.18%
NHS BORDERS	0.00%	0.83%	1.29%	1.70%	2.90%
NHS DUMFRIES & GALLOWAY	0.44%	1.47%	2.01%	2.50%	4.40%
NHS FIFE	0.00%	1.46%	1.88%	2.63%	6.85%
NHS FORTH VALLEY	0.58%	1.91%	2.90%	3.70%	13.04%
NHS GRAMPIAN	0.00%	2.03%	3.26%	4.13%	17.36%
NHS GREATER GLASGOW & CLYDE	0.00%	1.55%	2.43%	3.63%	19.92%
NHS HIGHLAND	0.00%	1.28%	2.49%	3.58%	8.78%
NHS LANARKSHIRE	0.00%	1.61%	2.42%	3.68%	9.92%
NHS LOTHIAN	0.00%	1.49%	2.41%	3.71%	11.63%
NHS ORKNEY	0.00%	1.39%	1.98%	2.08%	3.65%
NHS SHETLAND	0.00%	2.07%	2.67%	3.51%	5.80%
NHS TAYSIDE	0.00%	2.21%	2.80%	3.93%	9.60%
NHS WESTERN ISLES	1.44%	2.65%	3.16%	4.17%	4.44%
SCOTLAND		1.53%	2.41%	3.53%	

Bone Marrow Suppression: number of people prescribed methotrexate without co-prescription of folic acid as a percentage of all people prescribed methotrexate[†]

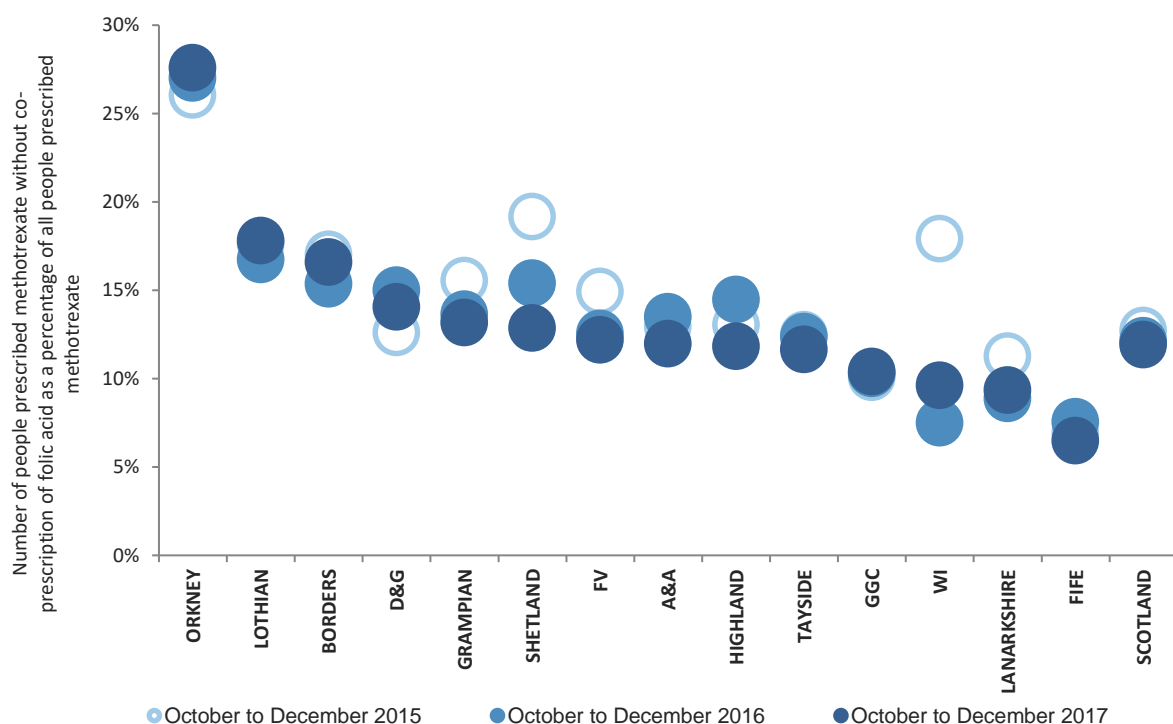
Indicator Group Polypharmacy **Adverse Effect** Bone Marrow Suppression

[From: [Polypharmacy Realistic Prescribing 2018](#)]

This is one of the Polypharmacy related National Therapeutic Indicators (named Additional Prescribing Measures on page 74 of the guidance document). Fourteen of the drug utilisation measures that can be used for both *Case Finding* and *Clinical Outcomes* are National Therapeutic Indicators. In Scotland the National Therapeutic Indicators provide prescribing measures, which are closely related to the high-risk medication *Case Finding* indicators in the Polypharmacy Guidance, and may be used to monitor *Clinical Outcomes*. A clear advantage of taking this approach is that they are mostly already built into the GP practice prescribing support tools and national datasets.

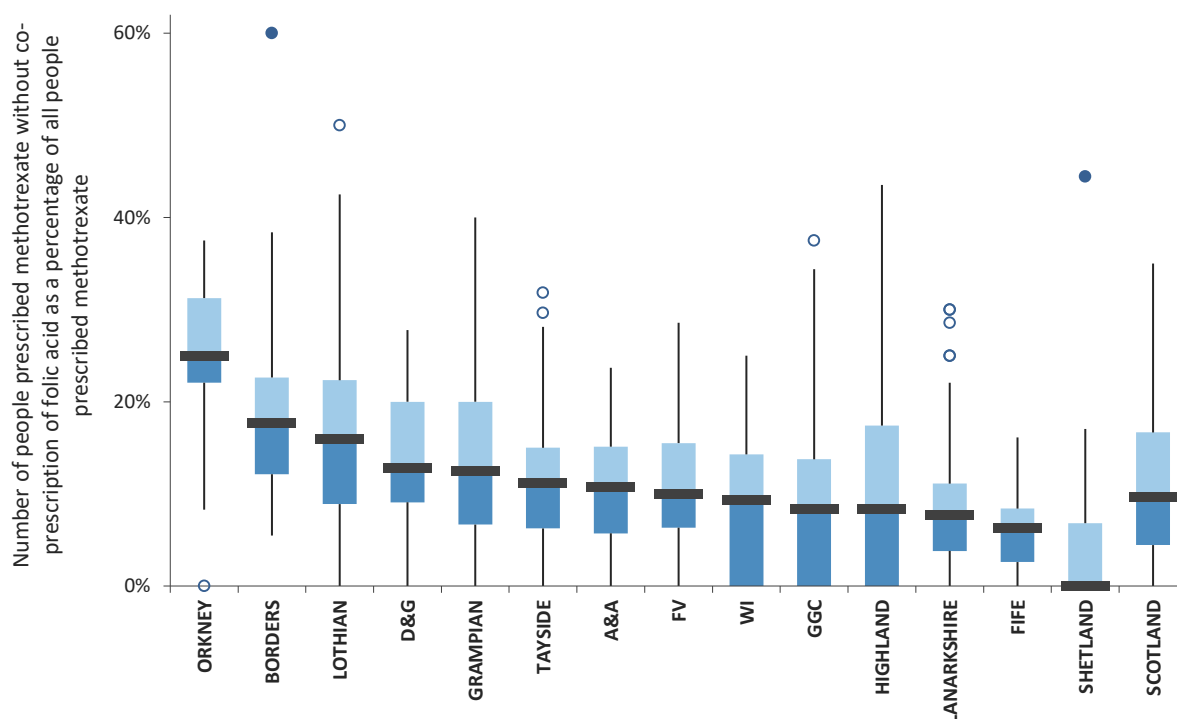
The analysis shows that prescribing of methotrexate without co-prescribed folic acid has decreased slightly over the last three years across Scotland and is different across the NHS Boards. On average there is at least a 4-fold variation in prescribing between the NHS Boards (6% of all people prescribed methotrexate were not co-prescribed folic acid in NHS Fife compared to 28% in NHS Orkney). The NHS Boards with the greatest variation between their GP Practices are NHS Highland, NHS Western Isles, NHS Greater Glasgow & Clyde, NHS Lothian, NHS Grampian; they all have interquartile ranges greater than 12%. There are 15 GP practices whose prescribing is identified as outlying within their NHS Board area.

Methotrexate - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: three outlier practices are not plotted; NHS Grampian 100%, NHS Highland 75%, NHS Greater Glasgow and Clyde 66.67%

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	0.00%	5.72%	10.71%	15.12%	23.68%
NHS BORDERS	5.48%	12.13%	17.65%	22.63%	60.00%
NHS DUMFRIES & GALLOWAY	0.00%	9.09%	12.82%	20.00%	27.78%
NHS FIFE	0.00%	2.60%	6.25%	8.40%	16.13%
NHS FORTH VALLEY	0.00%	6.33%	10.00%	15.51%	28.57%
NHS GRAMPIAN	0.00%	6.67%	12.50%	20.00%	100.00%
NHS GREATER GLASGOW & CLYDE	0.00%	0.00%	8.33%	13.75%	66.67%
NHS HIGHLAND	0.00%	0.00%	8.33%	17.41%	75.00%
NHS LANARKSHIRE	0.00%	3.81%	7.70%	11.11%	30.00%
NHS LOTHIAN	0.00%	8.89%	16.00%	22.34%	50.00%
NHS ORKNEY	0.00%	22.06%	25.00%	31.25%	37.50%
NHS SHETLAND	0.00%	0.00%	0.00%	6.82%	44.44%
NHS TAYSIDE	0.00%	6.25%	11.11%	15.00%	31.82%
NHS WESTERN ISLES	0.00%	0.00%	9.38%	14.29%	25.00%
SCOTLAND		4.44%	9.68%	16.67%	

† The methotrexate is within 3 months (Oct-Dec 2018) the folic acid is within 6 months (Jul-Dec 2018)

Falls, Fractures and Delirium: number of people aged ≥75 years dispensed > 10 items of strong or very strong anticholinergics (mARS 2&3) per annum as a percentage of all people aged ≥75 years

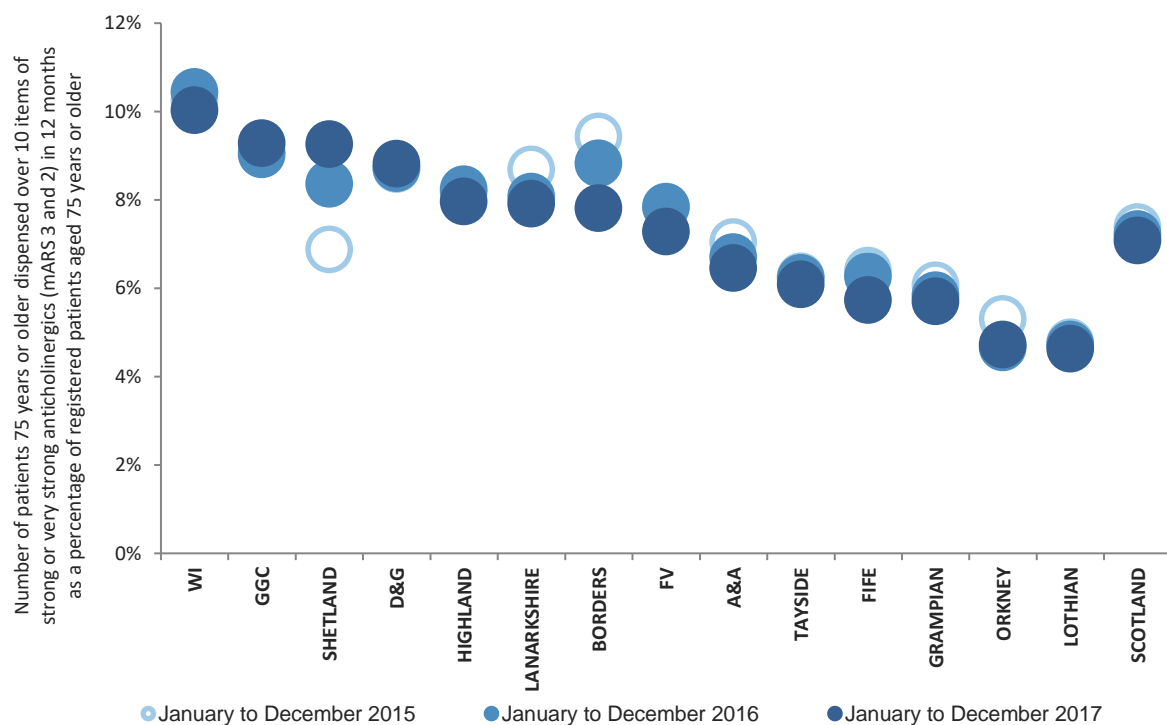
Indicator Group Polypharmacy **Adverse Effect** Falls, Fractures and Delirium

[From: [Polypharmacy Realistic Prescribing 2018](#)]

This is one of the Polypharmacy related National Therapeutic Indicators (named Additional Prescribing Measures on page 74 of the guidance document). Fourteen of the drug utilisation measures that can be used for both *Case Finding* and *Clinical Outcomes* are National Therapeutic Indicators. In Scotland the National Therapeutic Indicators provide prescribing measures, which are closely related to the high-risk medication *Case Finding* indicators in the Polypharmacy Guidance, and may be used to monitor *Clinical Outcomes*. A clear advantage of taking this approach is that they are mostly already built into the GP practice prescribing support tools and national datasets.

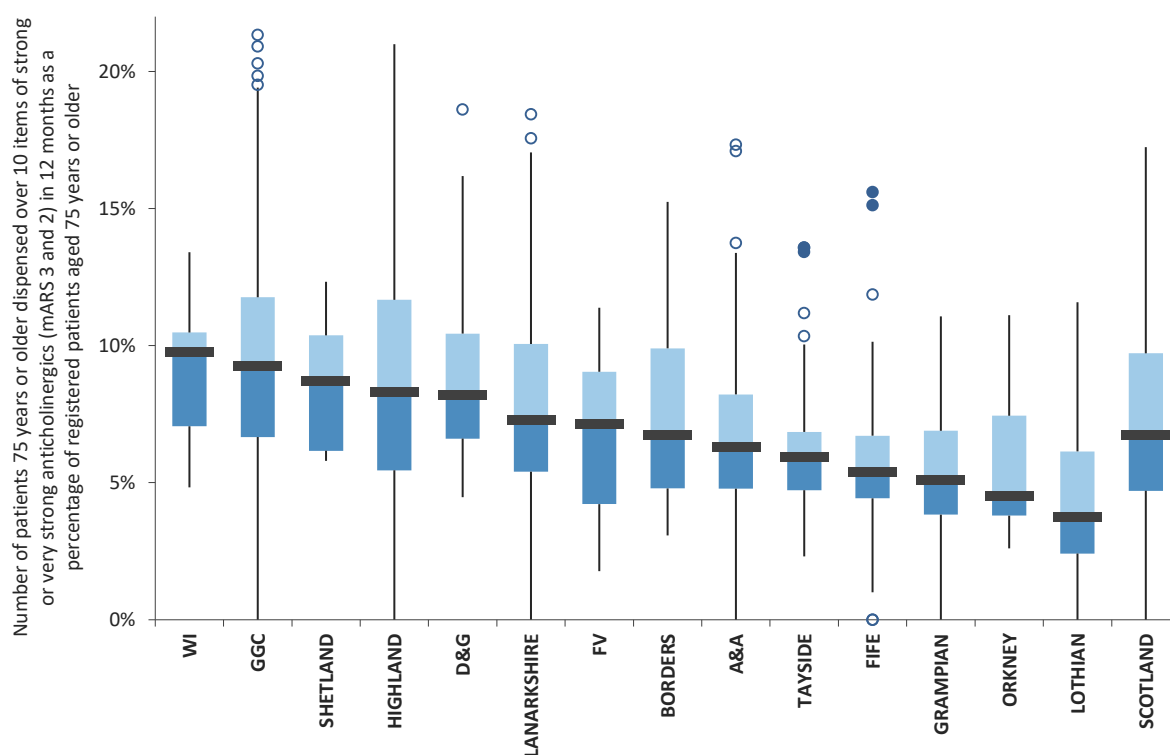
The analysis shows that prescribing of strong anticholinergics to older people has decreased slightly over the last three years across Scotland and is different across the Boards. On average there is at least a 2-fold variation in prescribing between the Boards (4.6% of all people aged ≥75 years were dispensed >10 items of strong or very strong anticholinergics per annum in NHS Lothian compared to 10.0% in NHS Western Isles). The Boards with the greatest variation between their GP Practices are NHS Highland, NHS Borders, NHS Greater Glasgow & Clyde; they all have interquartile ranges greater than 5%. There are 22 GP practices whose prescribing of strong anticholinergics in older people is identified as outlying within their NHS Board area.

Anticholinergics - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: one outlier practice was not plotted; NHS Highland 27.2%

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	0.00%	4.78%	6.29%	8.22%	17.33%
NHS BORDERS	3.08%	4.79%	6.76%	9.90%	15.24%
NHS DUMFRIES & GALLOWAY	4.47%	6.61%	8.21%	10.44%	18.61%
NHS FIFE	0.00%	4.43%	5.38%	6.72%	15.60%
NHS FORTH VALLEY	1.77%	4.22%	7.13%	9.05%	11.38%
NHS GRAMPIAN	0.00%	3.83%	5.11%	6.89%	11.07%
NHS GREATER GLASGOW & CLYDE	0.00%	6.67%	9.27%	11.76%	21.33%
NHS HIGHLAND	0.00%	5.45%	8.30%	11.67%	27.27%
NHS LANARKSHIRE	0.00%	5.40%	7.30%	10.06%	18.44%
NHS LOTHIAN	0.00%	2.42%	3.75%	6.14%	11.58%
NHS ORKNEY	2.60%	3.80%	4.51%	7.44%	11.11%
NHS SHETLAND	5.80%	6.17%	8.69%	10.37%	12.33%
NHS TAYSIDE	2.31%	4.73%	5.95%	6.85%	13.57%
NHS WESTERN ISLES	4.83%	7.06%	9.77%	10.48%	13.41%
SCOTLAND		4.71%	6.73%	9.72%	

Falls, Fractures and Delirium: number of people prescribed a long term oral steroid without co-prescription of a bone protecting agent as a percentage of all people prescribed a long term oral steroid

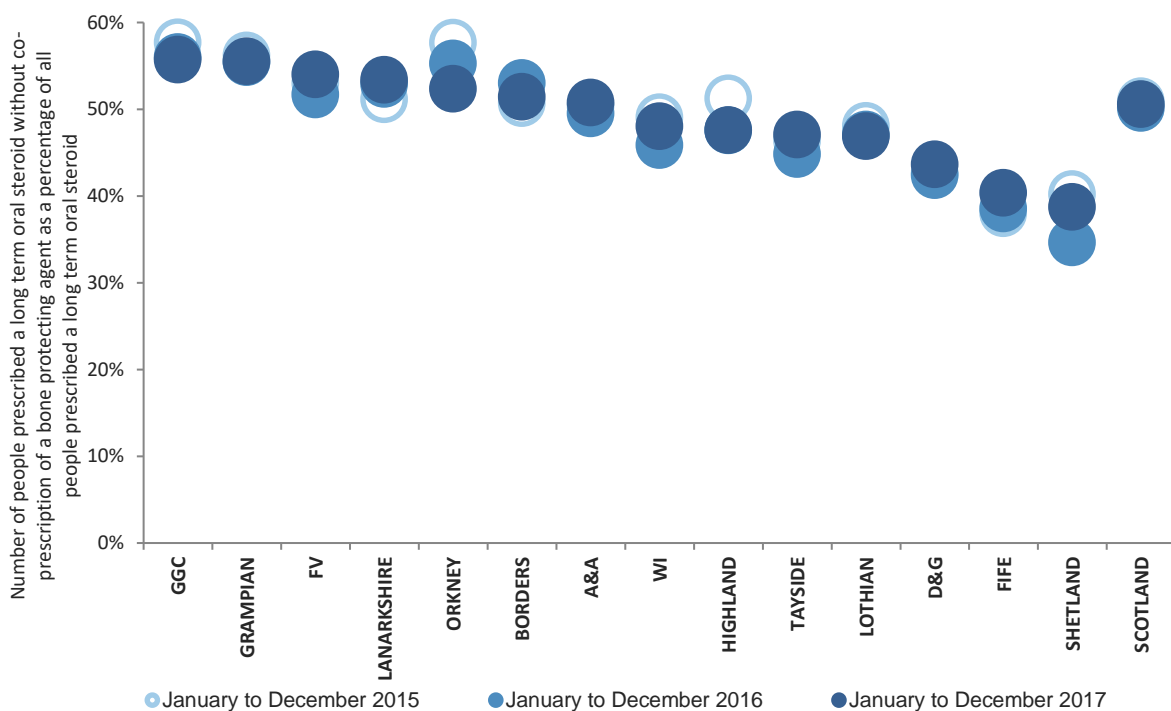
Indicator Group Polypharmacy **Adverse Effect** Falls, Fractures and Delirium

[From: [Polypharmacy Realistic Prescribing 2018](#)]

This is one of the Polypharmacy related National Therapeutic Indicators (named Additional Prescribing Measures on page 74 of the guidance document). Fourteen of the drug utilisation measures that can be used for both *Case Finding* and *Clinical Outcomes* are National Therapeutic Indicators. In Scotland the National Therapeutic Indicators provide prescribing measures, which are closely related to the high-risk medication *Case Finding* indicators in the Polypharmacy Guidance, and may be used to monitor *Clinical Outcomes*. A clear advantage of taking this approach is that they are mostly already built into the GP practice prescribing support tools and national datasets.

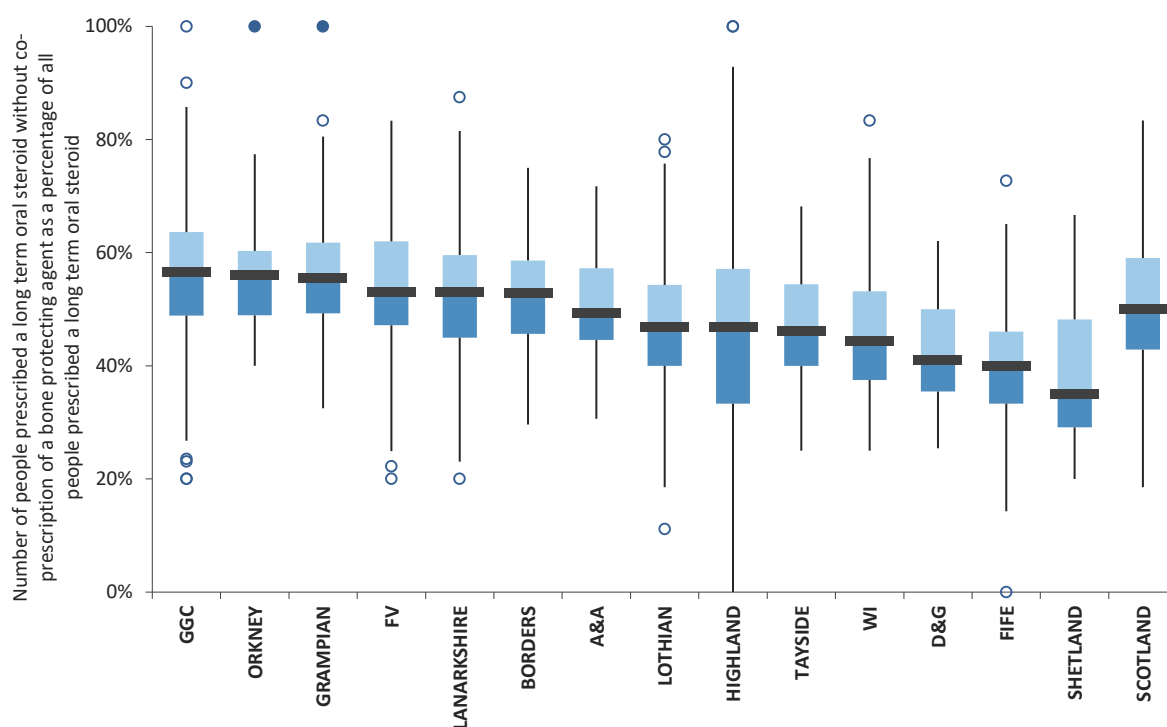
The analysis shows that prescribing of oral steroids without co-prescribed bone protection has not changed over the last three years across Scotland and is different across the NHS Boards. On average there is nearly a two-fold variation in prescribing between the NHS Boards (38.7% of all people prescribed an oral steroid long term were not prescribed bone protection in NHS Shetland compared to 55.7% in NHS Greater Glasgow and Clyde). The NHS Boards with the greatest variation between their GP Practices are NHS Highland, NHS Shetland, NHS Western Isles; they all have interquartile ranges greater than 15%. There are 21 GP practices whose prescribing of strong anticholinergics in older people is identified as outlying within their NHS Board area.

Oral Steroids - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Year



NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS Ayrshire & Arran	30.65%	44.56%	49.41%	57.26%	71.74%
NHS Borders	29.63%	45.66%	52.94%	58.63%	75.00%
NHS Dumfries & Galloway	25.42%	35.44%	41.03%	50.00%	62.07%
NHS Fife	0.00%	33.33%	40.00%	46.03%	72.73%
NHS Forth Valley	20.00%	47.17%	53.13%	62.00%	83.33%
NHS Grampian	32.50%	49.28%	55.56%	61.78%	100.00%
NHS Greater Glasgow & Clyde	20.00%	48.89%	56.52%	63.64%	100.00%
NHS Highland	0.00%	33.33%	46.76%	57.14%	100.00%
NHS Lanarkshire	20.00%	44.98%	53.03%	59.59%	87.50%
NHS Lothian	11.11%	40.00%	46.81%	54.30%	80.00%
NHS Orkney	40.00%	48.92%	56.14%	60.31%	100.00%
NHS Shetland	20.00%	29.12%	35.08%	48.21%	66.67%
NHS Tayside	25.00%	40.00%	46.15%	54.41%	68.18%
NHS Western Isles	25.00%	37.50%	44.44%	53.19%	83.33%
Scotland		42.86%	50.00%	59.06%	

NB long-term steroid use is measured over 12 months and bone protection in most recent 3 months.

Sulfonylureas: number of people aged ≥ 75 years prescribed sulfonylureas as a percentage of all people aged ≥ 75 years prescribed an anti-diabetic drugs

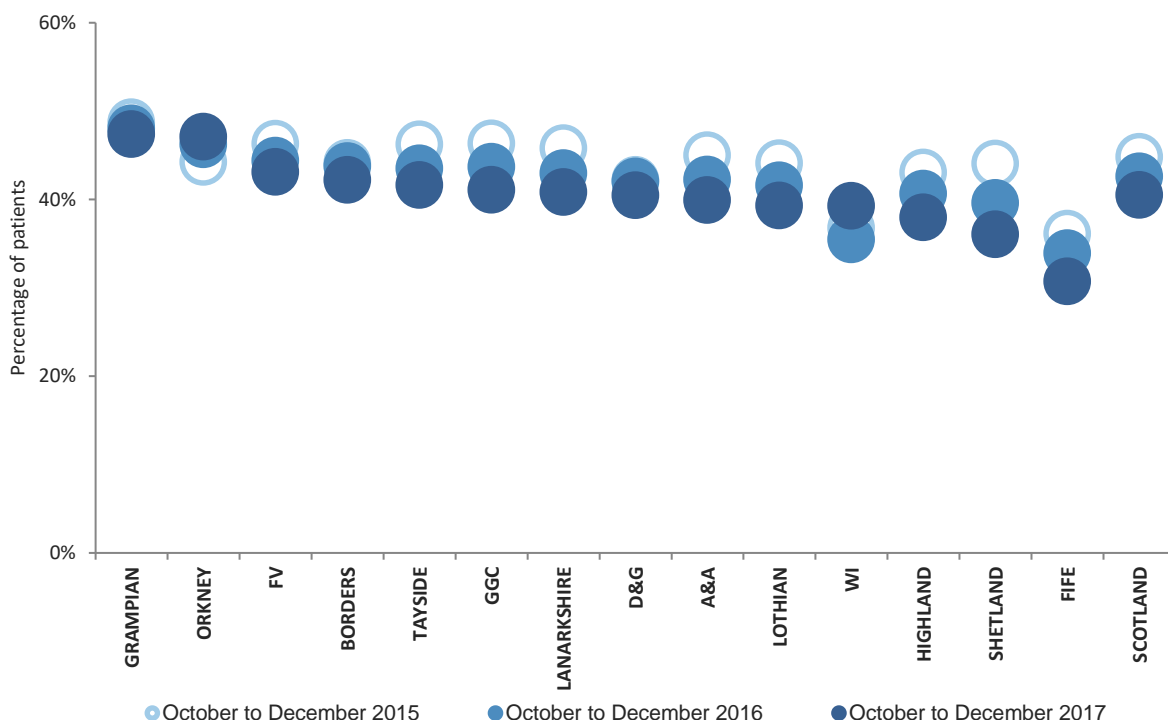
Indicator Group Polypharmacy **Adverse Effect** Falls, Fractures and Delirium

[From: [Polypharmacy Realistic Prescribing 2018](#)]

This is one of the Polypharmacy related National Therapeutic Indicators (named Additional Prescribing Measures on page 74 of the guidance document). Fourteen of the drug utilisation measures that can be used for both *Case Finding* and *Clinical Outcomes* are National Therapeutic Indicators. In Scotland the National Therapeutic Indicators provide prescribing measures, which are closely related to the high-risk medication *Case Finding* indicators in the Polypharmacy Guidance, and may be used to monitor *Clinical Outcomes*. A clear advantage of taking this approach is that they are mostly already built into the GP practice prescribing support tools and national datasets.

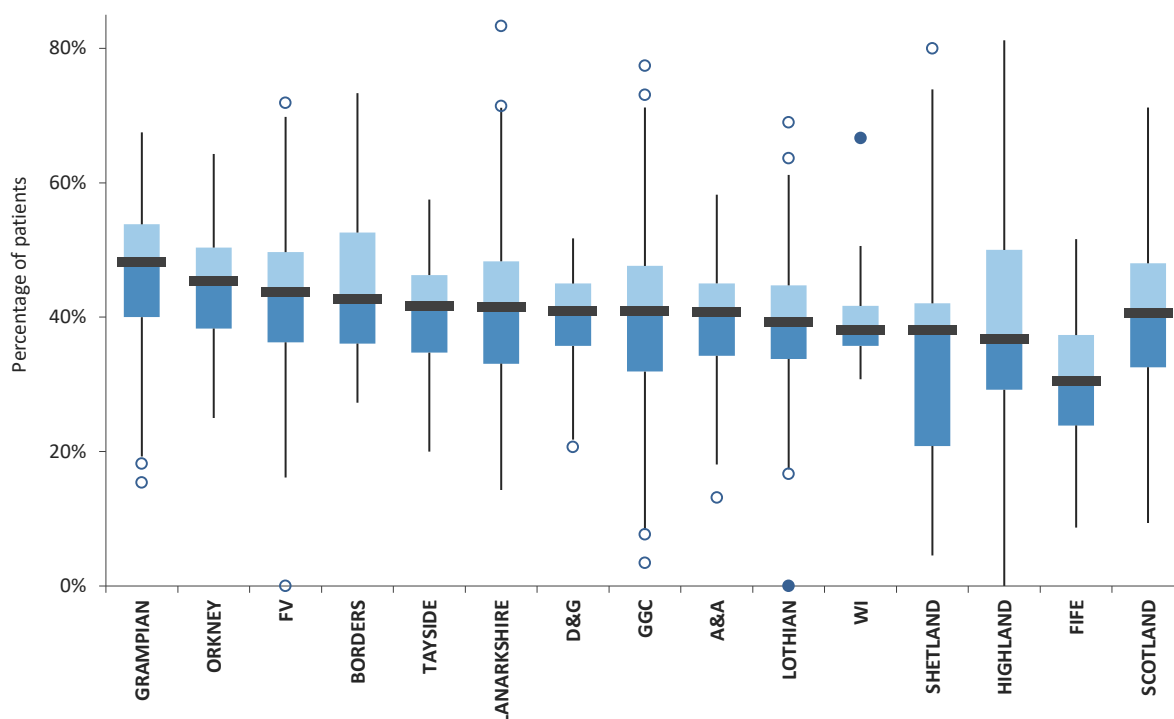
The analysis shows that prescribing of sulfonylureas to older people has decreased over the last three years across Scotland and in most of the Boards. On average there is 50% variation in prescribing between the NHS Boards (30.7% of all people aged ≥75 years were prescribed sulfonylureas in NHS Fife compared to 47.4% in NHS Grampian). The Boards with the greatest variation between their GP Practices NHS Shetland, NHS Highland, NHS Borders, NHS Greater Glasgow & Clyde, NHS Lanarkshire; they all have interquartile ranges greater than 15%. There are 20 practices whose prescribing of sulfonylureas in older people is identified as outlying within their Board.

Sulfonylureas - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: one outlier practice was not plotted; NHS Highland 100%

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS Ayrshire & Arran	13.16%	34.25%	40.74%	45.03%	58.23%
NHS Borders	27.27%	36.07%	42.62%	52.59%	73.33%
NHS Dumfries & Galloway	20.69%	35.71%	40.98%	45.00%	51.72%
NHS Fife	8.70%	23.89%	30.51%	37.34%	51.61%
NHS Forth Valley	0.00%	36.26%	43.80%	49.68%	71.88%
NHS Grampian	15.38%	40.00%	48.15%	53.82%	67.50%
NHS Greater Glasgow & Clyde	3.45%	31.90%	40.91%	47.62%	77.42%
NHS Highland	0.00%	29.20%	36.71%	50.00%	100.00%
NHS Lanarkshire	14.29%	33.09%	41.52%	48.32%	83.33%
NHS Lothian	0.00%	33.78%	39.29%	44.74%	68.97%
NHS Orkney	25.00%	38.31%	45.45%	50.36%	64.29%
NHS Shetland	4.55%	20.83%	38.18%	42.06%	80.00%
NHS Tayside	20.00%	34.72%	41.67%	46.27%	57.50%
NHS Western Isles	30.77%	35.71%	38.18%	41.67%	66.67%
Scotland		32.56%	40.69%	48.01%	

High Dose Corticosteroid Inhalers: high dose corticosteroid inhalers as a percentage of all corticosteroid inhalers (items) using 2016 SIGN/BTS classification

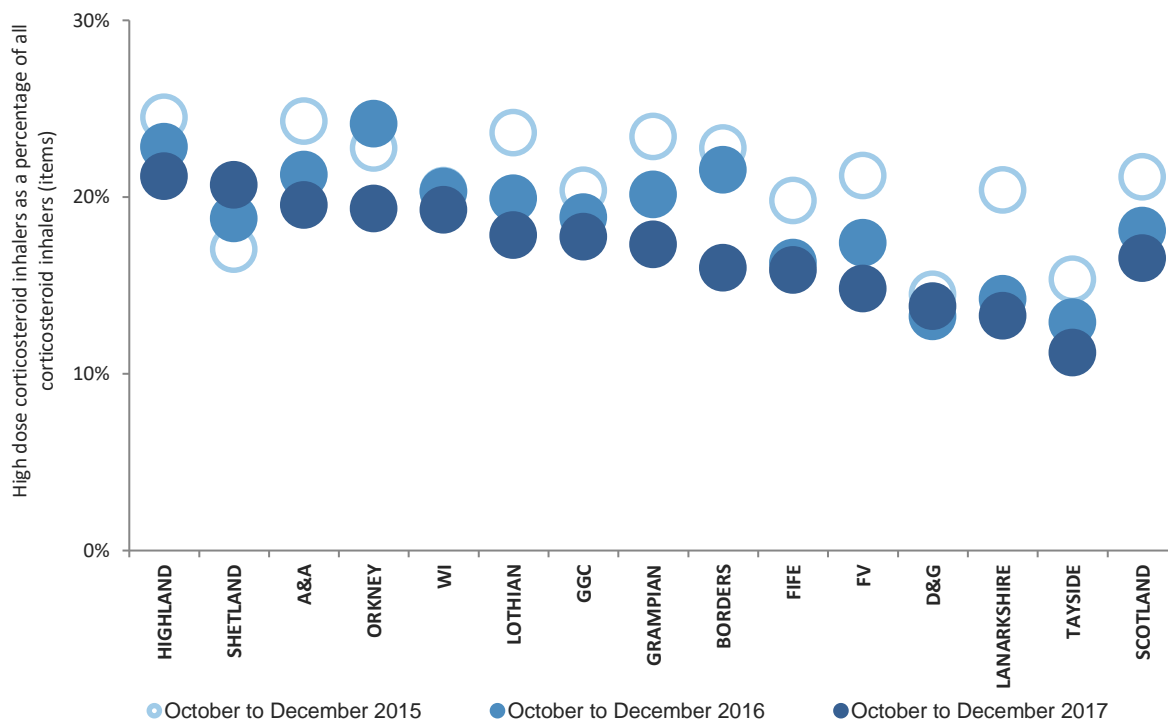
Indicator Group Polypharmacy **Drug Group** High Strength Inhaled Corticosteroids

[From: [Polypharmacy Realistic Prescribing 2018](#)]

This is one of the Polypharmacy related National Therapeutic Indicators (named Additional Prescribing Measures on page 74 of the guidance document). Fourteen of the drug utilisation measures that can be used for both *Case Finding* and *Clinical Outcomes* are National Therapeutic Indicators. In Scotland the National Therapeutic Indicators provide prescribing measures, which are closely related to the high-risk medication *Case Finding* indicators in the Polypharmacy Guidance, and may be used to monitor *Clinical Outcomes*. A clear advantage of taking this approach is that they are mostly already built into the GP practice prescribing support tools and national datasets.

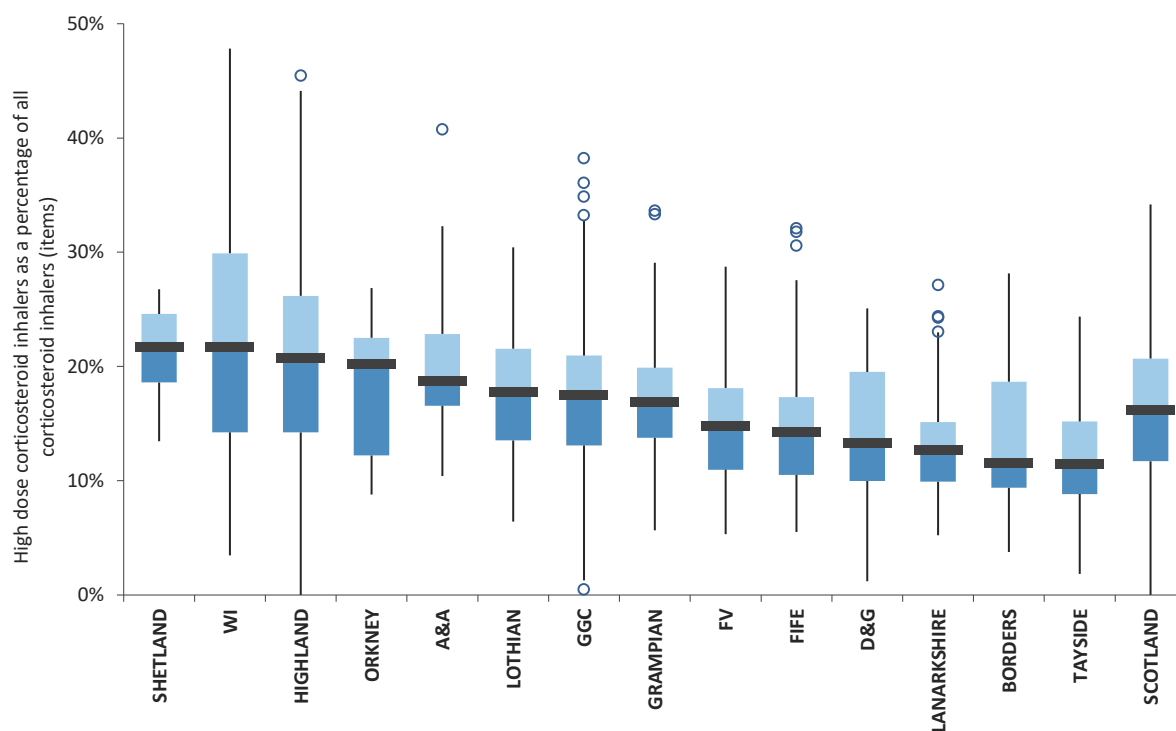
The analysis shows that prescribing of high dose inhaled corticosteroids has reduced in most Boards over the last three years. There is nearly a 2-fold variation in prescribing between the Boards (11.2% of all inhaled corticosteroids prescribed were high dose inhaled corticosteroids in NHS Tayside compared to 21.2% in NHS Highland). The Boards with the greatest variation between their GP Practices are NHS Western Isles, NHS Highland, NHS Orkney, NHS Dumfries & Galloway, NHS Borders; they all have interquartile ranges greater than 9%. There are 17 GP practices whose prescribing of high dose inhaled corticosteroids is identified as outlying within their Board.

Inhaled Corticosteroids (High Strength) - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: one outlier practice was not plotted; Highland 52%

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	10.41%	16.56%	18.70%	22.85%	40.74%
NHS BORDERS	3.77%	9.38%	11.53%	18.67%	28.15%
NHS DUMFRIES & GALLOWAY	1.20%	9.98%	13.35%	19.52%	25.08%
NHS FIFE	5.51%	10.52%	14.29%	17.33%	32.10%
NHS FORTH VALLEY	5.33%	10.97%	14.81%	18.12%	28.74%
NHS GRAMPIAN	5.66%	13.76%	16.93%	19.89%	33.63%
NHS GREATER GLASGOW & CLYDE	0.49%	13.09%	17.48%	20.96%	38.23%
NHS HIGHLAND	0.00%	14.23%	20.75%	26.19%	52.00%
NHS LANARKSHIRE	5.23%	9.91%	12.68%	15.14%	27.12%
NHS LOTHIAN	6.43%	13.53%	17.77%	21.56%	30.43%
NHS ORKNEY	8.80%	12.21%	20.21%	22.52%	26.87%
NHS SHETLAND	13.46%	18.60%	21.76%	24.60%	26.76%
NHS TAYSIDE	1.85%	8.84%	11.44%	15.19%	24.37%
NHS WESTERN ISLES	3.47%	14.24%	21.68%	29.91%	47.83%
SCOTLAND		11.70%	16.16%	20.70%	

Gabapentinoid dependency: number of people prescribed a gabapentinoid at an average daily dose equivalent to >4800mg gabapentin over the previous 6 months as a percentage of all people prescribed a gabapentinoid

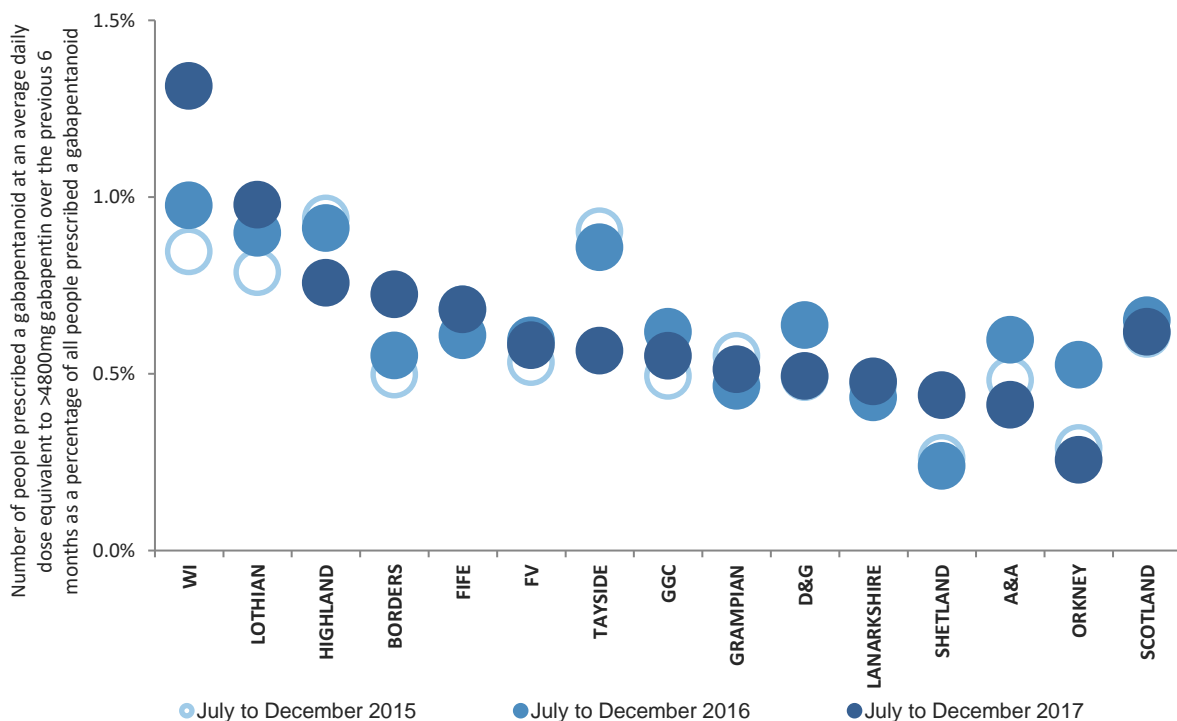
Indicator Group Polypharmacy **Adverse Effect** Opioid and gabapentinoid dependency

[From: [Polypharmacy Realistic Prescribing 2018](#)]

This is one of the Polypharmacy related National Therapeutic Indicators (named Additional Prescribing Measures on page 74 of the guidance document). Fourteen of the drug utilisation measures that can be used for both *Case Finding* and *Clinical Outcomes* are National Therapeutic Indicators. In Scotland the National Therapeutic Indicators provide prescribing measures, which are closely related to the high-risk medication *Case Finding* indicators in the Polypharmacy Guidance, and may be used to monitor *Clinical Outcomes*. A clear advantage of taking this approach is that they are mostly already built into the GP practice prescribing support tools and national datasets.

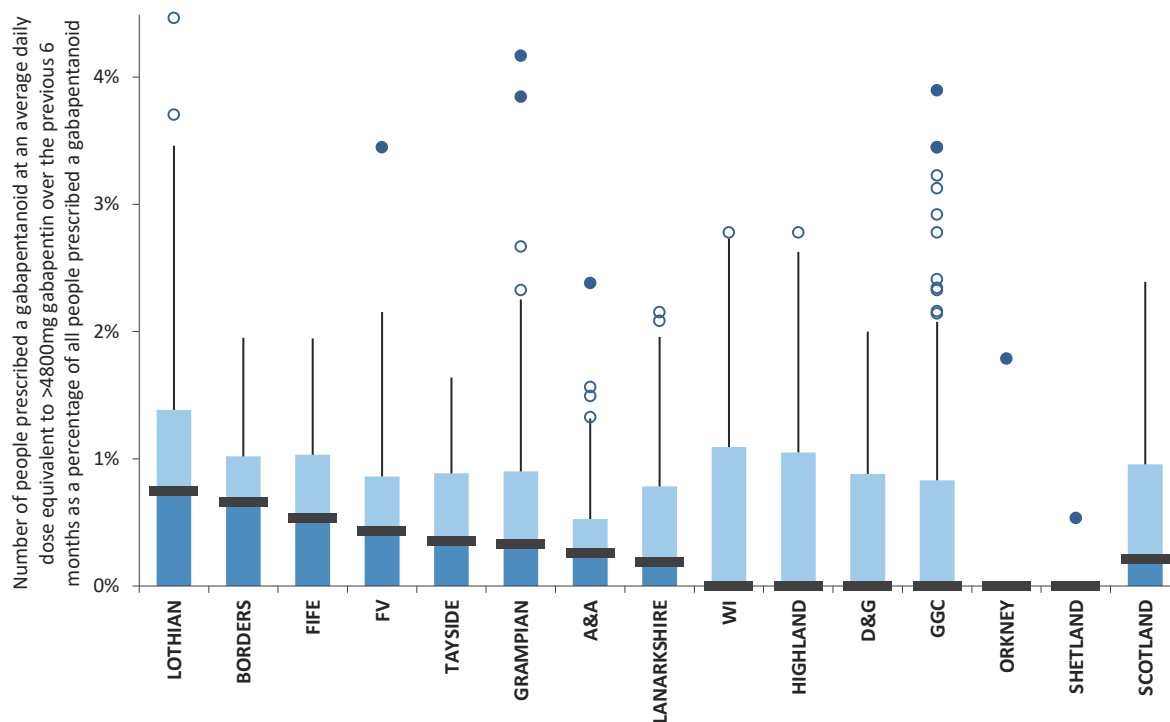
The analysis shows that prescribing of high doses of gabapentinoid has reduced slightly over the last three years across Scotland and is different across the NHS Boards. On average there is a 4-fold variation in prescribing between the NHS Boards (0.3% of all people prescribed a gabapentinoid in NHS Orkney compared to 1.3% in NHS Western Isles). The NHS Boards with the greatest variation between their GP Practices are NHS Lothian, NHS Western Isles, NHS Highland, NHS Fife, NHS Borders; they all have interquartile ranges greater than 1%. There are 35 GP practices whose prescribing is identified as outlying within their NHS Board area.

Gabapentinoids - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: five outlier practices were not plotted; Shetland 7.7%, Grampian 5.9%, Highland 5.3% 5% 4.5%

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	0.00%	0.00%	0.26%	0.53%	2.38%
NHS BORDERS	0.00%	0.00%	0.66%	1.02%	1.95%
NHS DUMFRIES & GALLOWAY	0.00%	0.00%	0.00%	0.88%	2.00%
NHS FIFE	0.00%	0.00%	0.53%	1.03%	1.95%
NHS FORTH VALLEY	0.00%	0.00%	0.43%	0.86%	3.45%
NHS GRAMPIAN	0.00%	0.00%	0.33%	0.90%	5.88%
NHS GREATER GLASGOW & CLYDE	0.00%	0.00%	0.00%	0.83%	3.90%
NHS HIGHLAND	0.00%	0.00%	0.00%	1.05%	5.26%
NHS LANARKSHIRE	0.00%	0.00%	0.19%	0.78%	2.15%
NHS LOTHIAN	0.00%	0.00%	0.75%	1.38%	4.46%
NHS ORKNEY	0.00%	0.00%	0.00%	0.00%	1.79%
NHS SHETLAND	0.00%	0.00%	0.00%	0.00%	7.69%
NHS TAYSIDE	0.00%	0.00%	0.35%	0.88%	1.64%
NHS WESTERN ISLES	0.00%	0.00%	0.00%	1.09%	2.78%
SCOTLAND		0.00%	0.22%	0.96%	

NB an extended period of time 6 months is used to measure the average daily dose

Opioid dependency: number of people prescribed an opioid at an average daily dose of opioid equivalent to $\geq 120\text{mg}$ per day of morphine over the previous 6 months as a percentage of all people prescribed step 2 and strong opioids†

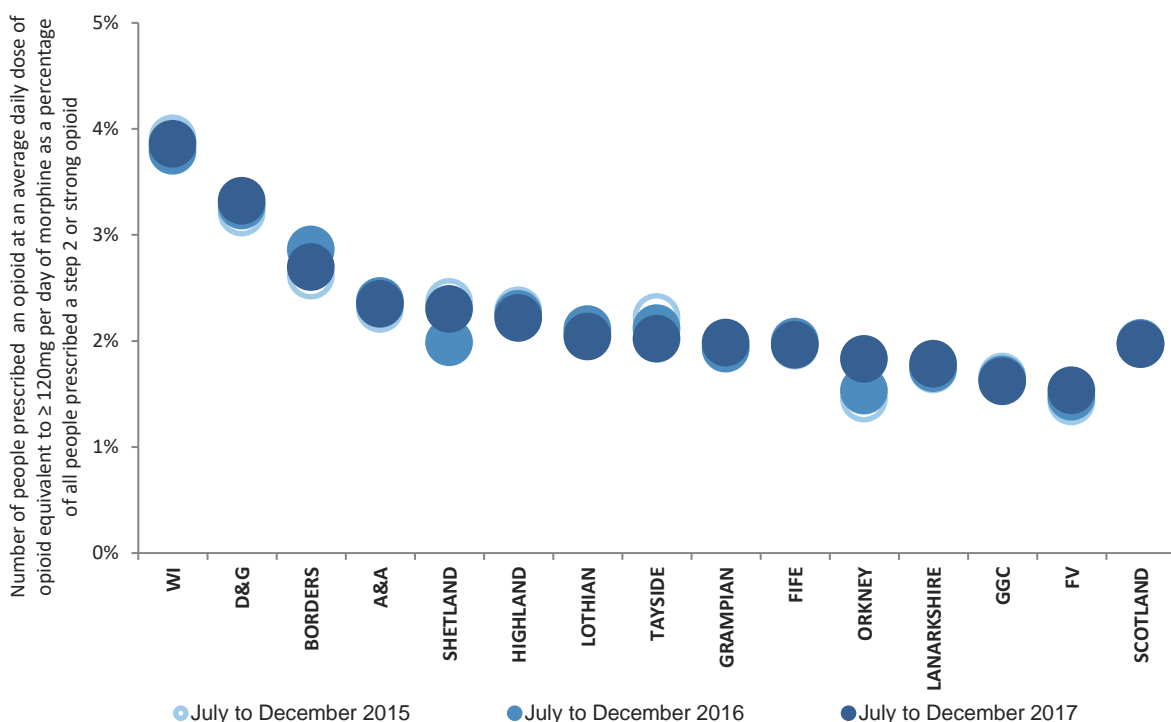
Indicator Group Polypharmacy **Adverse Effect** Opioid and gabapentinoid dependency

[From: [Polypharmacy Realistic Prescribing 2018](#)]

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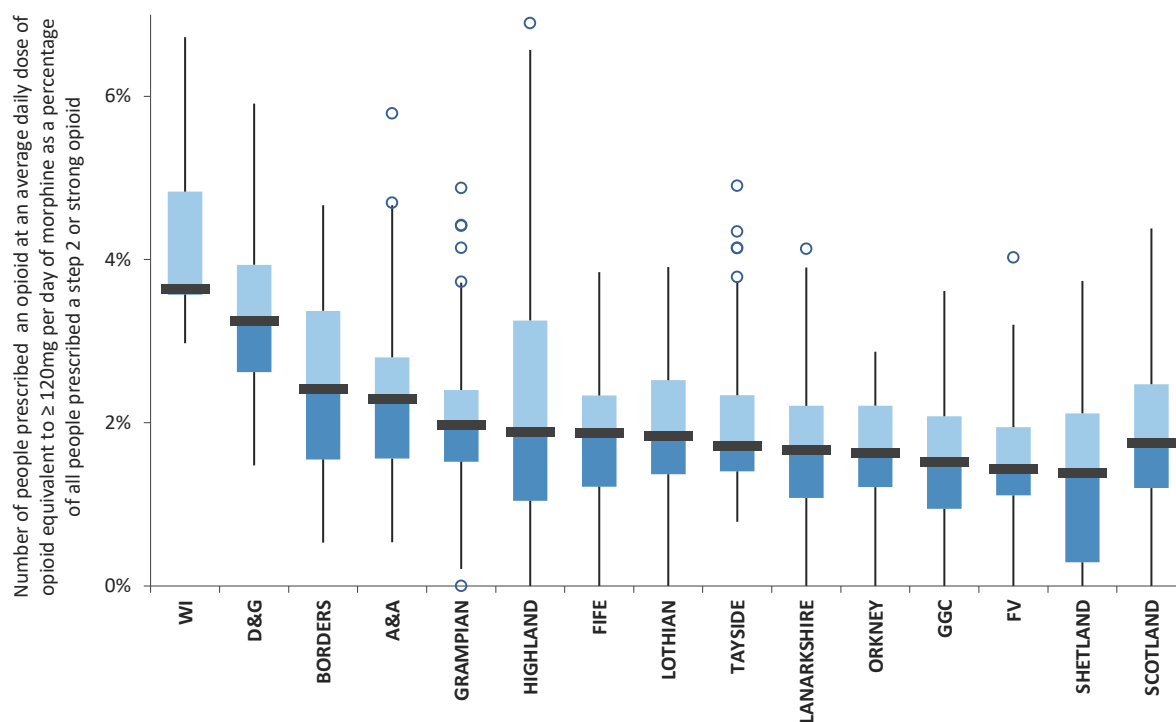
The analysis shows that prescribing of opioids (daily $>120\text{mg}$ morphine or equivalent) has not changed over the last three years across Scotland and is different across the NHS Boards. On average there is at least a 2-fold variation in prescribing between the NHS Boards (1.5% of all people prescribed an opioid prescribed each day $>120\text{mg}$ morphine (or equivalent) in NHS Forth Valley compared to 3.8% in NHS Western Isles). The NHS Boards with the greatest variation between their GP Practices are NHS Highland, NHS Shetland, NHS Borders, NHS Dumfries & Galloway; they all have interquartile ranges greater than 1.3%. There are 18 GP practices whose prescribing of opioids (daily $>120\text{mg}$ morphine or equivalent) is identified as outlying within their NHS Board area.

Opioids (daily $>120\text{mg}$ morphine or equivalent) - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: two outlier practices were not plotted; Dumfries and Galloway 9.8%, Western Isles 8.1%

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	0.54%	1.56%	2.29%	2.80%	5.79%
NHS BORDERS	0.53%	1.55%	2.41%	3.37%	4.67%
NHS DUMFRIES & GALLOWAY	1.48%	2.62%	3.25%	3.94%	9.85%
NHS FIFE	0.00%	1.22%	1.88%	2.33%	3.85%
NHS FORTH VALLEY	0.00%	1.11%	1.44%	1.95%	4.03%
NHS GRAMPIAN	0.00%	1.52%	1.97%	2.40%	4.88%
NHS GREATER GLASGOW & CLYDE	0.00%	0.95%	1.52%	2.08%	3.61%
NHS HIGHLAND	0.00%	1.04%	1.89%	3.25%	6.90%
NHS LANARKSHIRE	0.00%	1.08%	1.67%	2.21%	4.13%
NHS LOTHIAN	0.00%	1.37%	1.84%	2.52%	3.91%
NHS ORKNEY	0.00%	1.21%	1.63%	2.21%	2.87%
NHS SHETLAND	0.00%	0.29%	1.38%	2.12%	3.74%
NHS TAYSIDE	0.79%	1.40%	1.71%	2.34%	4.91%
NHS WESTERN ISLES	2.98%	3.57%	3.65%	4.83%	8.06%
SCOTLAND		1.20%	1.75%	2.47%	

NB an extended period of time 6 months is used to measure the average daily dose

Opioid Dependency: Number of people prescribed an opioid at an average daily dose of opioid equivalent to $\geq 50\text{mg}$ per day of morphine over the previous 6 months as a percentage of all people prescribed step 2 and strong opioids

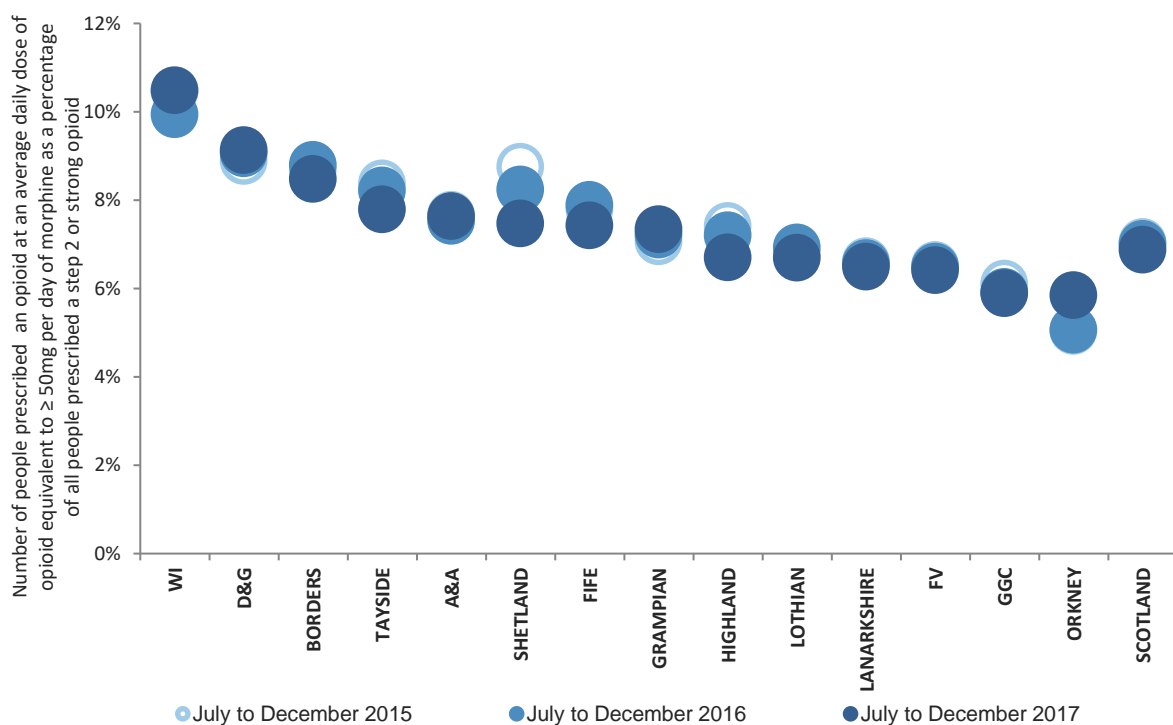
Indicator Group Polypharmacy **Adverse Effect** Opioid and gabapentinoid dependency

[From: [Polypharmacy Realistic Prescribing 2018](#)]

This is one of the Polypharmacy related National Therapeutic Indicators (named Additional Prescribing Measures on page 74 of the guidance document). Fourteen of the drug utilisation measures that can be used for both *Case Finding* and *Clinical Outcomes* are National Therapeutic Indicators. In Scotland the National Therapeutic Indicators provide prescribing measures, which are closely related to the high-risk medication *Case Finding* indicators in the Polypharmacy Guidance, and may be used to monitor *Clinical Outcomes*. A clear advantage of taking this approach is that they are mostly already built into the GP practice prescribing support tools and national datasets.

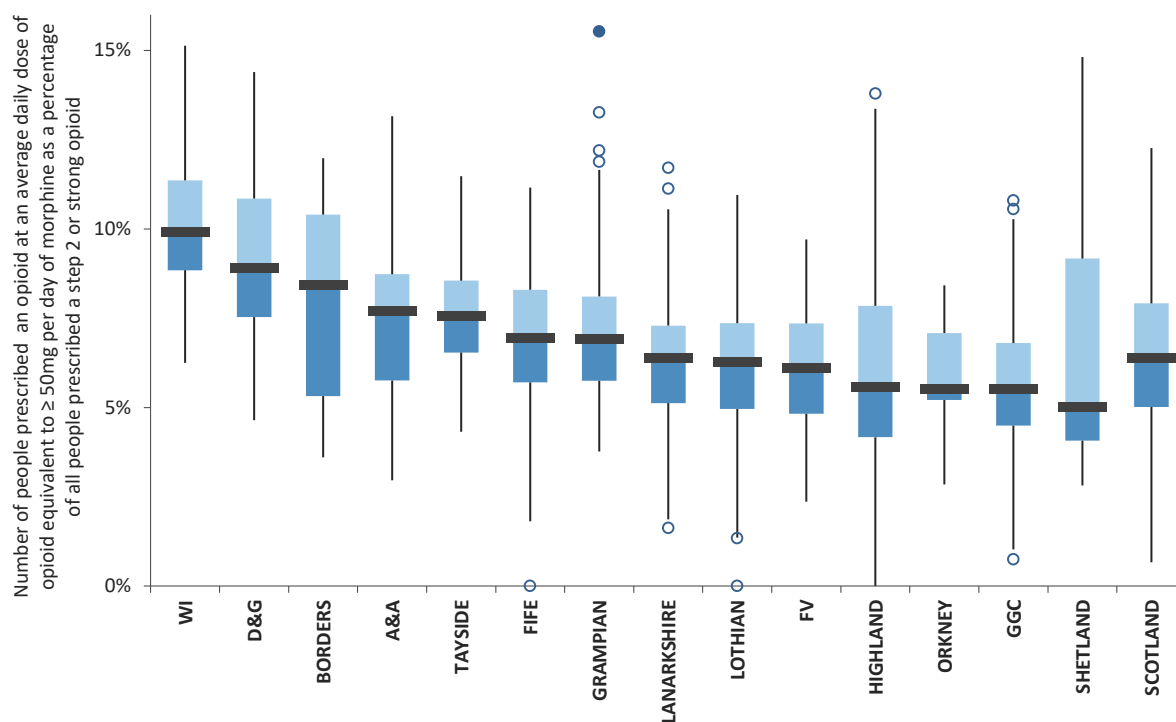
The analysis shows that prescribing of opioids (daily $>50\text{mg}$ morphine or equivalent) has reduced slightly over the last three years across Scotland and is different across the NHS Boards. On average there is nearly a 2-fold variation in prescribing between the NHS Boards (5.8% of all people prescribed an opioid prescribed each day $>50\text{mg}$ morphine (or equivalent) in NHS Orkney compared to 10.5% in NHS Western Isles). The NHS Boards with the greatest variation between their GP Practices are NHS Shetland, NHS Borders, NHS Highland, NHS Dumfries & Galloway; they all have interquartile ranges greater than 3%. There are 17 GP practices whose prescribing of opioids (daily $>50\text{mg}$ morphine or equivalent) is identified as outlying within their NHS Board area.

Opioids (daily $>50\text{mg}$ morphine or equivalent) - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: three outlier practices were not plotted; Highland 26.7%, Western Isles 18.1% 18%

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	2.96%	5.76%	7.71%	8.73%	13.16%
NHS BORDERS	3.60%	5.32%	8.43%	10.40%	11.98%
NHS DUMFRIES & GALLOWAY	4.64%	7.53%	8.91%	10.85%	14.39%
NHS FIFE	0.00%	5.70%	6.93%	8.30%	11.16%
NHS FORTH VALLEY	2.36%	4.83%	6.10%	7.35%	9.71%
NHS GRAMPIAN	3.77%	5.75%	6.91%	8.11%	15.53%
NHS GREATER GLASGOW & CLYDE	0.75%	4.49%	5.52%	6.81%	10.79%
NHS HIGHLAND	0.00%	4.17%	5.56%	7.85%	26.67%
NHS LANARKSHIRE	1.62%	5.12%	6.39%	7.29%	11.71%
NHS LOTHIAN	0.00%	4.96%	6.26%	7.36%	10.95%
NHS ORKNEY	2.85%	5.21%	5.53%	7.09%	8.42%
NHS SHETLAND	2.82%	4.07%	5.02%	9.17%	14.81%
NHS TAYSIDE	4.32%	6.54%	7.55%	8.55%	11.48%
NHS WESTERN ISLES	6.25%	8.85%	9.92%	11.36%	18.10%
SCOTLAND		5.02%	6.40%	7.92%	

NB an extended period of time 6 months is used to measure the average daily dose

Opioid dependency: number of people prescribed strong opioids (including tramadol preparations) long term (>2 years) as a percentage of all people prescribed strong opioids

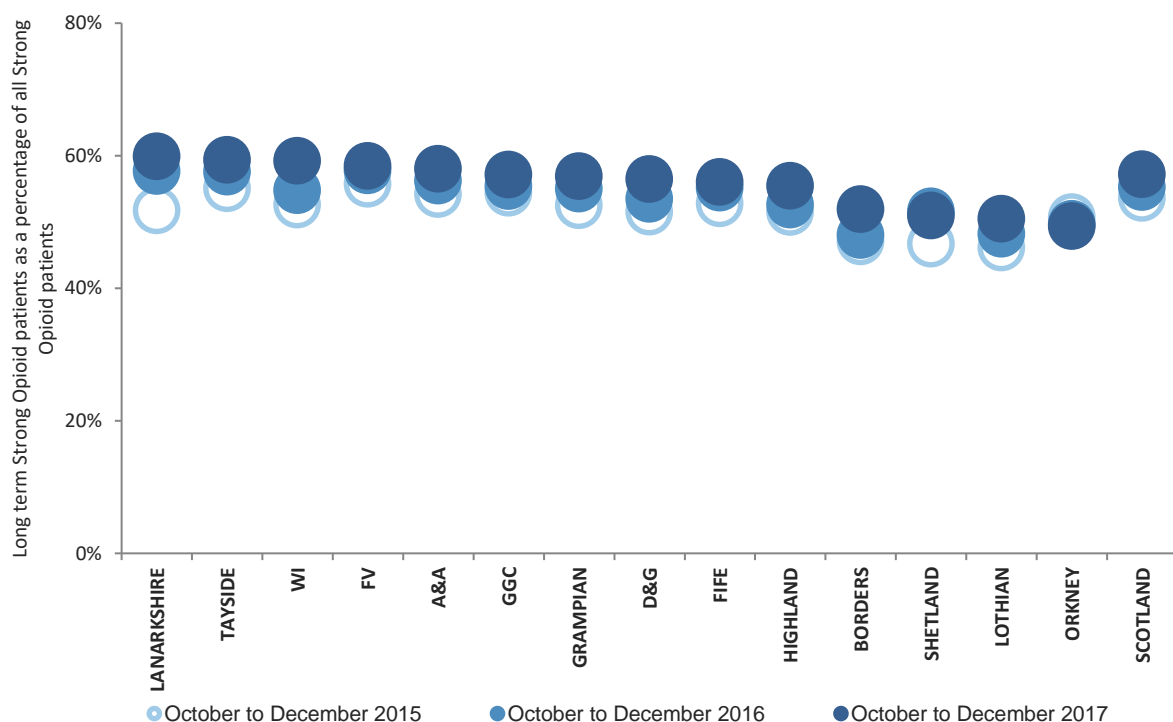
Indicator Group Polypharmacy **Adverse Effect** Opioid and gabapentinoid dependency

[From: [Polypharmacy Realistic Prescribing 2018](#)]

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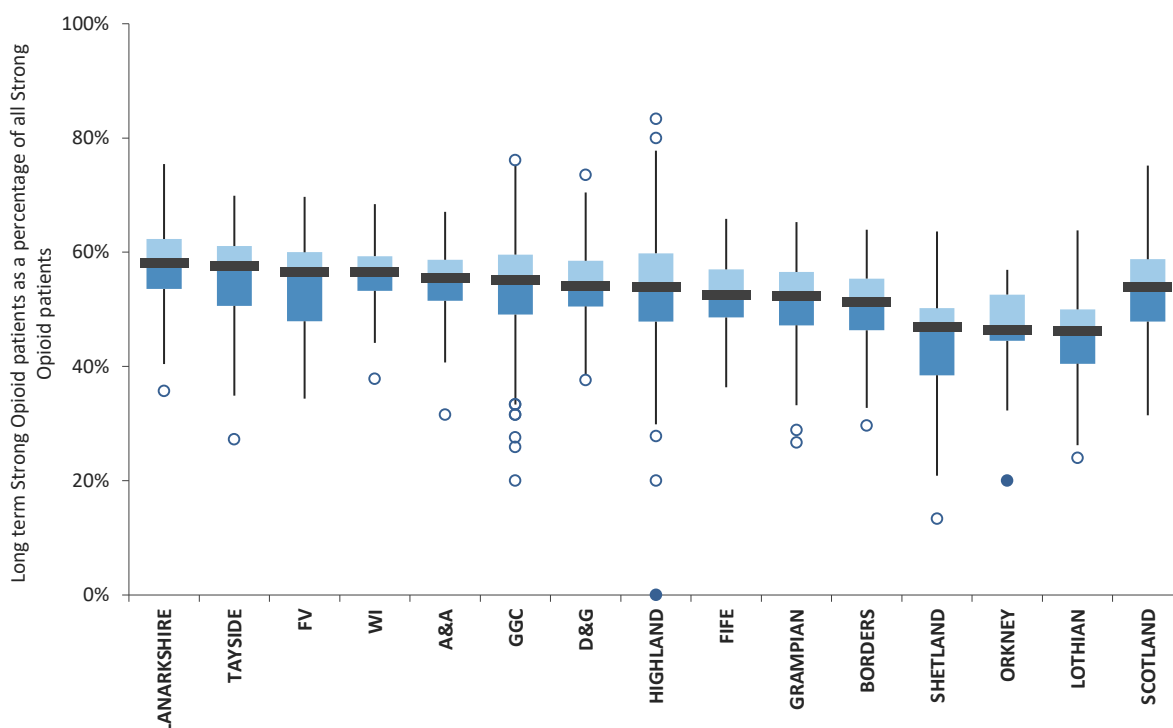
The analysis shows that prescribing of long term opioids (>2 years) has increased over the last three years across Scotland and in most of the NHS Boards. On average there is little variation in prescribing between the NHS Boards (49.3% of all people prescribed an opioid prescribed opioids for > 2 years in NHS Orkney compared to 58.8% in NHS Lanarkshire). The NHS Boards with the greatest variation between their GP Practices are NHS Forth Valley, NHS Highland, NHS Shetland, NHS Greater Glasgow & Clyde, NHS Tayside; they all have interquartile ranges greater than 10%. There are 25 GP practices whose prescribing of long term opioids is identified as outlying within their NHS Board area.

Long-term Opioids - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	31.58%	51.49%	55.41%	58.68%	67.07%
NHS BORDERS	29.63%	46.34%	51.35%	55.39%	63.95%
NHS DUMFRIES & GALLOWAY	37.63%	50.53%	54.14%	58.50%	73.53%
NHS FIFE	36.36%	48.58%	52.46%	57.00%	65.84%
NHS FORTH VALLEY	34.38%	47.92%	56.60%	60.00%	69.70%
NHS GRAMPIAN	26.67%	47.22%	52.37%	56.55%	65.28%
NHS GREATER GLASGOW & CLYDE	20.00%	49.09%	55.12%	59.59%	76.14%
NHS HIGHLAND	0.00%	47.84%	53.85%	59.82%	83.33%
NHS LANARKSHIRE	35.71%	53.56%	58.04%	62.32%	75.44%
NHS LOTHIAN	24.00%	40.49%	46.30%	50.00%	63.83%
NHS ORKNEY	20.00%	44.48%	46.43%	52.60%	56.92%
NHS SHETLAND	13.33%	38.47%	46.99%	50.20%	63.64%
NHS TAYSIDE	27.27%	50.61%	57.52%	61.09%	69.89%
NHS WESTERN ISLES	37.84%	53.25%	56.56%	59.32%	68.42%
SCOTLAND		47.85%	53.89%	58.78%	

NB the measure identifies people prescribed opioids in the latest quarter and of them the proportion prescribed them long-term (>2 years)

Poor Asthma Control: number of people prescribed more than 12 short-acting beta-agonist (SABA) inhalers per annum as a percentage of all people prescribed SABAs

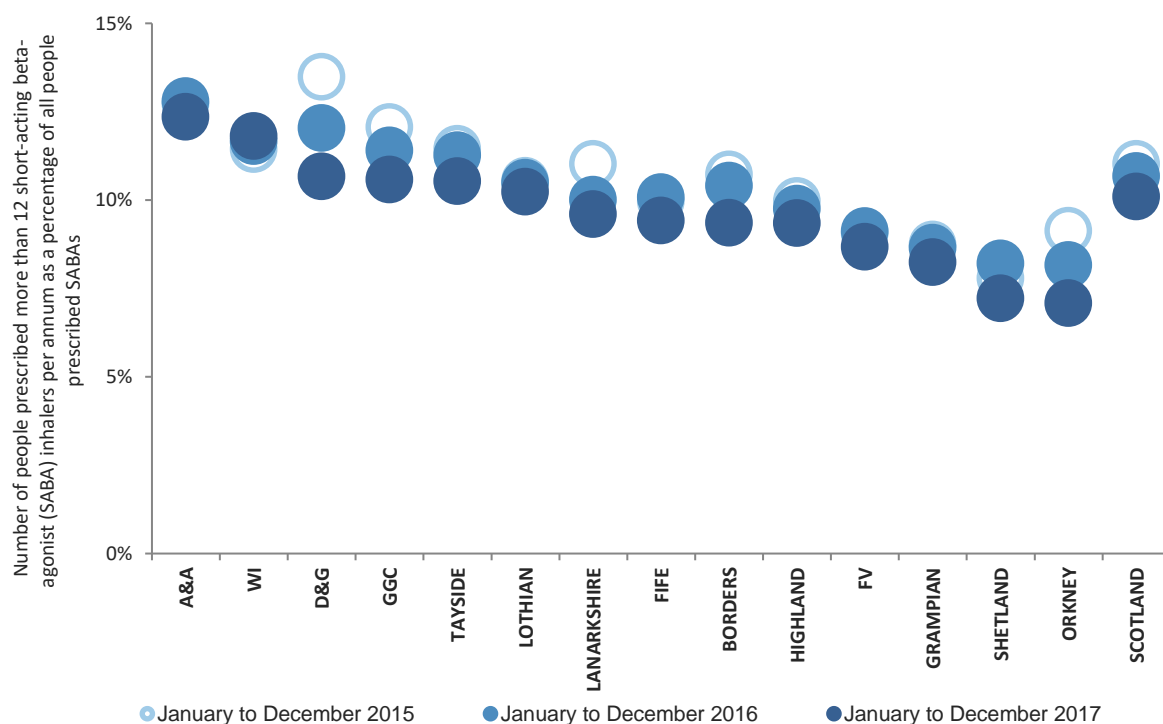
Indicator Group Polypharmacy **Adverse Effect** Poor Asthma Control

[From: [Polypharmacy Realistic Prescribing 2018](#)]

This is one of the Polypharmacy related National Therapeutic Indicators (named Additional Prescribing Measures on page 74 of the guidance document). Fourteen of the drug utilisation measures that can be used for both *Case Finding* and *Clinical Outcomes* are National Therapeutic Indicators. In Scotland the National Therapeutic Indicators provide prescribing measures, which are closely related to the high-risk medication *Case Finding* indicators in the Polypharmacy Guidance, and may be used to monitor *Clinical Outcomes*. A clear advantage of taking this approach is that they are mostly already built into the GP practice prescribing support tools and national datasets.

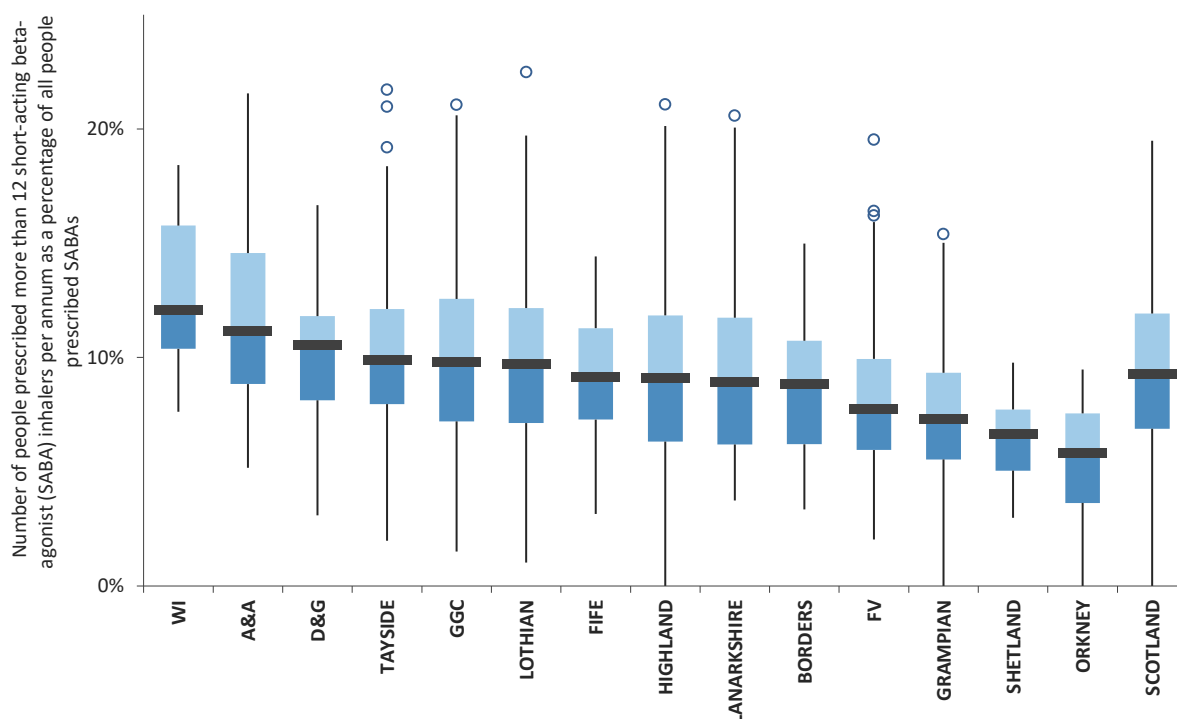
The analysis shows that prescribing of excess SABA inhalers (>12 per annum) has decreased over the last three years across Scotland and in most of the NHS Boards. On average there is nearly a 2-fold variation in prescribing between the NHS Boards (7.1% of all people prescribed SABA inhalers prescribed >12 per annum years in NHS Orkney compared to 12.4% in NHS Ayrshire and Arran). The NHS Boards with the greatest variation between their GP Practices are NHS Ayrshire & Arran, NHS Lanarkshire, NHS Highland, NHS Western Isles, NHS Greater Glasgow & Clyde; they all have interquartile ranges greater than 5%. There are 13 GP practices whose prescribing of excess SABA inhalers (>12 per annum) is identified as outlying within their NHS Board area.

SABA Inhalers (>12 inhalers per annum) - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: two outlier practices were not plotted; NHS Highland 27.8%, NHS Greater Glasgow & Clyde 25.7%

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS AYRSHIRE & ARRAN	5.17%	8.84%	11.17%	14.57%	21.56%
NHS BORDERS	3.35%	6.20%	8.85%	10.73%	14.99%
NHS DUMFRIES & GALLOWAY	3.09%	8.13%	10.54%	11.81%	16.67%
NHS FIFE	3.15%	7.28%	9.14%	11.28%	14.42%
NHS FORTH VALLEY	2.04%	5.95%	7.76%	9.94%	19.53%
NHS GRAMPIAN	0.00%	5.54%	7.32%	9.33%	15.39%
NHS GREATER GLASGOW & CLYDE	1.51%	7.21%	9.81%	12.56%	25.66%
NHS HIGHLAND	0.00%	6.32%	9.09%	11.84%	27.78%
NHS LANARKSHIRE	3.74%	6.19%	8.92%	11.74%	20.58%
NHS LOTHIAN	1.03%	7.13%	9.70%	12.16%	22.49%
NHS ORKNEY	0.00%	3.64%	5.83%	7.55%	9.47%
NHS SHETLAND	2.99%	5.05%	6.65%	7.73%	9.77%
NHS TAYSIDE	1.98%	7.96%	9.88%	12.13%	21.71%
NHS WESTERN ISLES	7.63%	10.38%	12.07%	15.77%	18.42%
SCOTLAND		6.88%	9.26%	11.92%	

Inhaled Corticosteroids: number of people prescribed >14 inhaled corticosteroid inhalers per annum as a % of all people prescribed inhaled corticosteroid inhalers

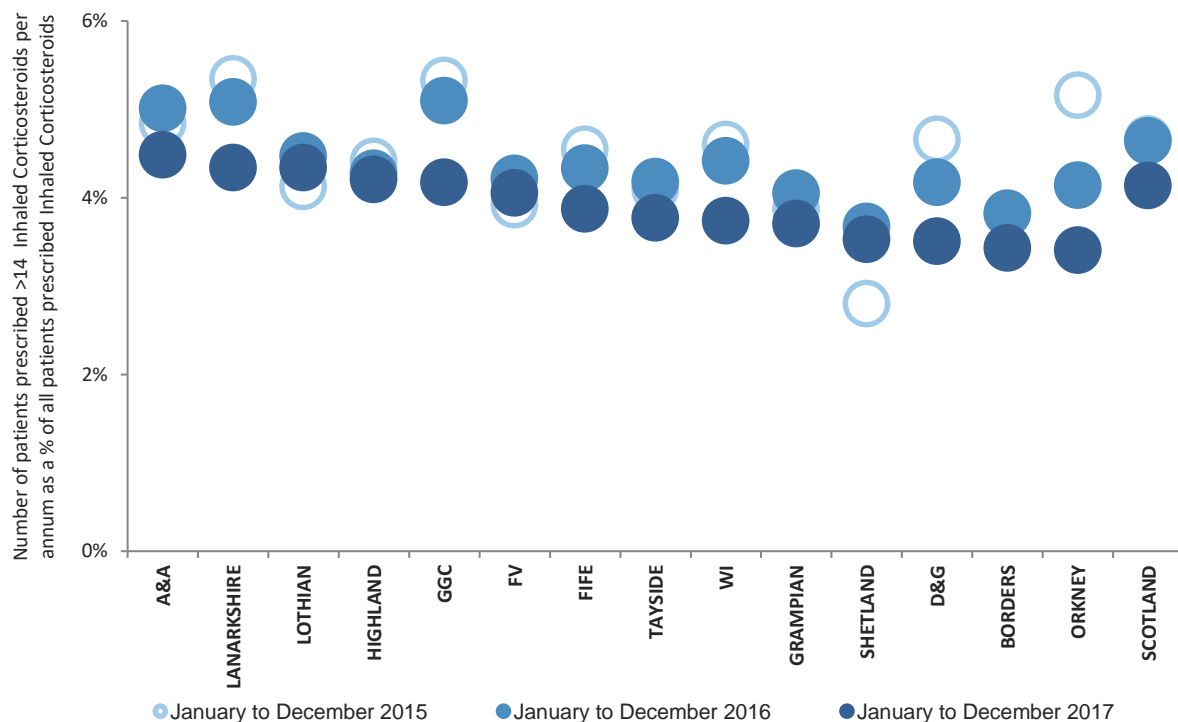
Indicator Group Respiratory **Drug Group** Inhaled Corticosteroids

[From: [Quality Prescribing for Respiratory – A Guide for Improvement 2018](#)]

Boards should continue to endeavour to minimise unnecessary medicines waste. The excess supply of inhaled corticosteroids was highlighted in the 2014 strategy. This NTI is an appropriate measure of potential waste in a key area. Clinicians would expect patients to receive the equivalent of 12 months of dosing per year, therefore more than 14 inhalers may represent waste.

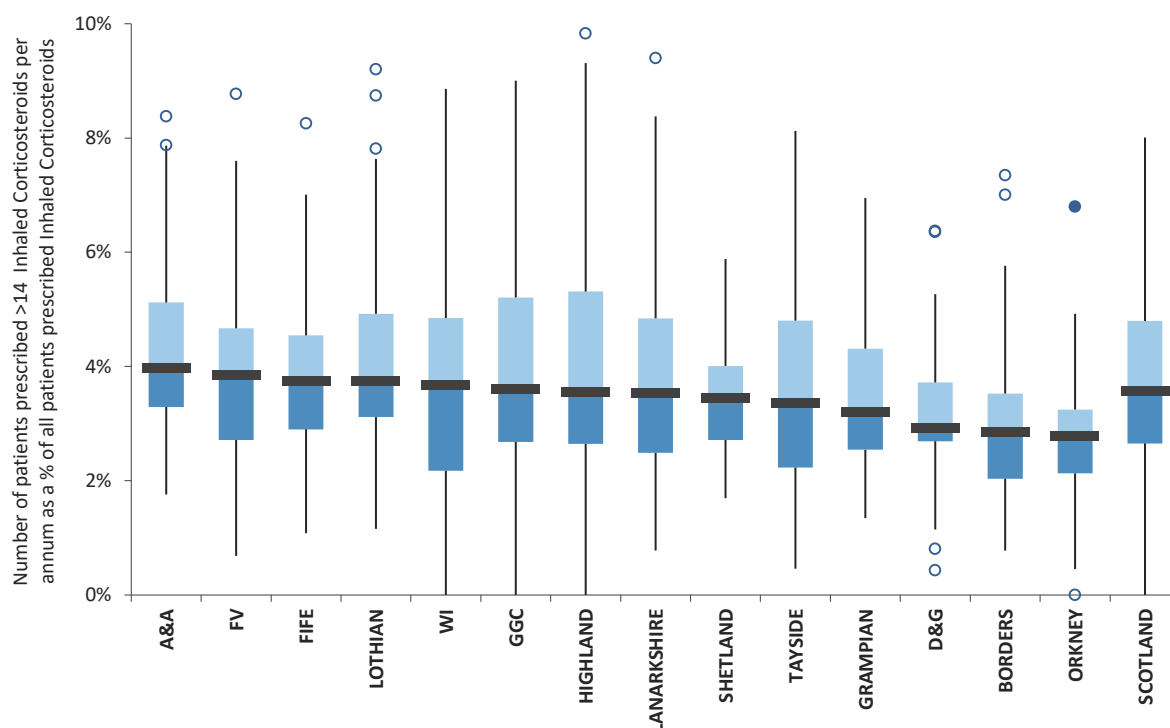
The analysis shows that prescribing of excess inhaled corticosteroids (>14 per annum) has decreased over the last three years across Scotland and in most of the NHS Boards. On average there is little variation in prescribing between the NHS Boards (3.4% of all people prescribed inhaled corticosteroids prescribed >14 per annum years in NHS Orkney compared to 4.5% in NHS Ayrshire and Arran). The NHS Boards with the greatest variation between their GP Practices are NHS Western Isles, NHS Highland, NHS Tayside, NHS Greater Glasgow & Clyde, NHS Lanarkshire; they all have interquartile ranges greater than 2%. There are 19 GP practices whose prescribing of excess inhaled corticosteroids (>14 per annum) is identified as outlying within their NHS Board area.

Inhaled Corticosteroids (>14 inhalers per annum) - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Year



NB: two outlier practices were not plotted; NHS Greater Glasgow & Clyde 14.3%, NHS Western Isles 11.5%

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS Ayrshire & Arran	1.76%	3.29%	3.97%	5.12%	8.38%
NHS Borders	0.78%	2.04%	2.85%	3.53%	7.35%
NHS Dumfries & Galloway	0.43%	2.69%	2.92%	3.72%	6.37%
NHS Fife	1.08%	2.90%	3.74%	4.54%	8.26%
NHS Forth Valley	0.68%	2.71%	3.85%	4.67%	8.77%
NHS Grampian	1.35%	2.54%	3.20%	4.31%	6.95%
NHS Greater Glasgow & Clyde	0.00%	2.68%	3.60%	5.21%	14.29%
NHS Highland	0.00%	2.64%	3.56%	5.31%	9.83%
NHS Lanarkshire	0.78%	2.49%	3.54%	4.84%	9.40%
NHS Lothian	1.16%	3.12%	3.74%	4.92%	9.20%
NHS Orkney	0.00%	2.13%	2.78%	3.25%	6.80%
NHS Shetland	1.69%	2.71%	3.46%	4.01%	5.88%
NHS Tayside	0.46%	2.23%	3.37%	4.80%	8.12%
NHS Western Isles	0.00%	2.17%	3.67%	4.85%	11.46%
Scotland		2.65%	3.57%	4.80%	

Mucolytics: number of people prescribed mucolytics long term (> 2 years) per 1,000 LS[†]

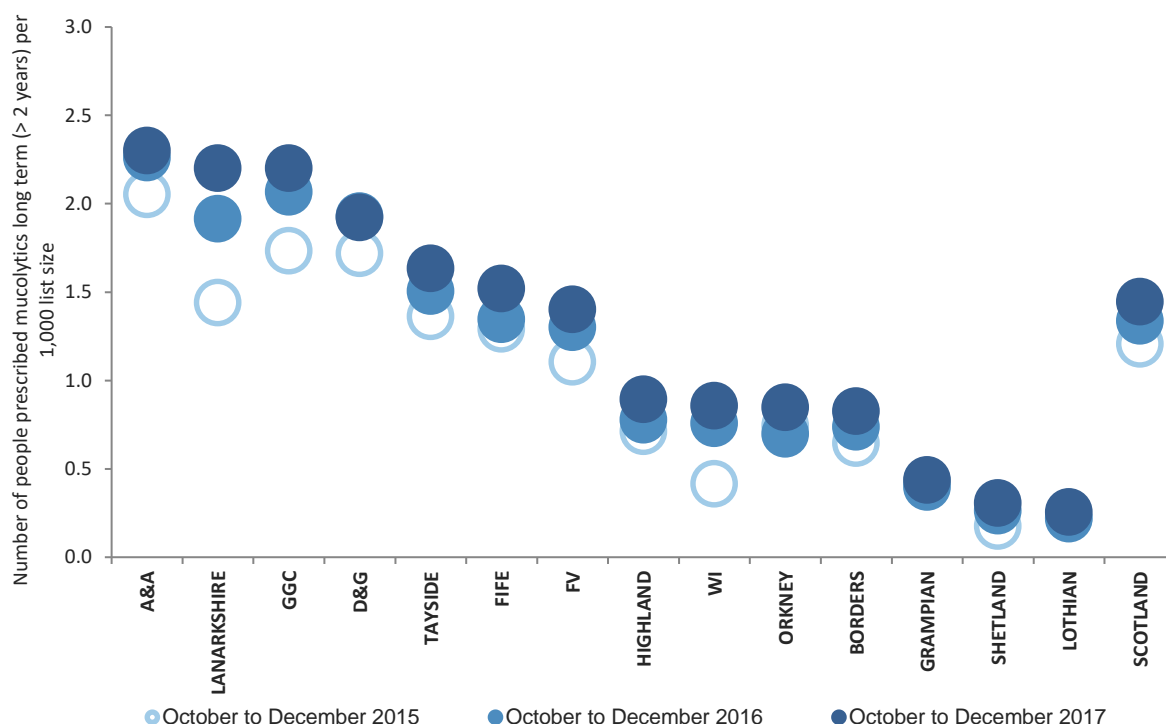
Indicator Group Respiratory Drug Group Mucolytics

[From: [Quality Prescribing for Respiratory – A Guide for Improvement 2018](#)]

Oral mucolytic drugs may be considered in patients with a chronic productive cough. Mucolytic therapy should only be continued if there is symptomatic improvement (for example, reduction in frequency of cough and sputum production). Mucolytic therapy should be stopped if there is no benefit after four weeks. They should not be routinely used to prevent exacerbations in people with stable COPD. It is important that a clinical review of mucolytic prescribing is undertaken at four weeks, regardless of where the medicine was initiated – this should be scheduled when prescribing is commenced. Boards should be cognisant of the importance of cross sector improvement work in this area.

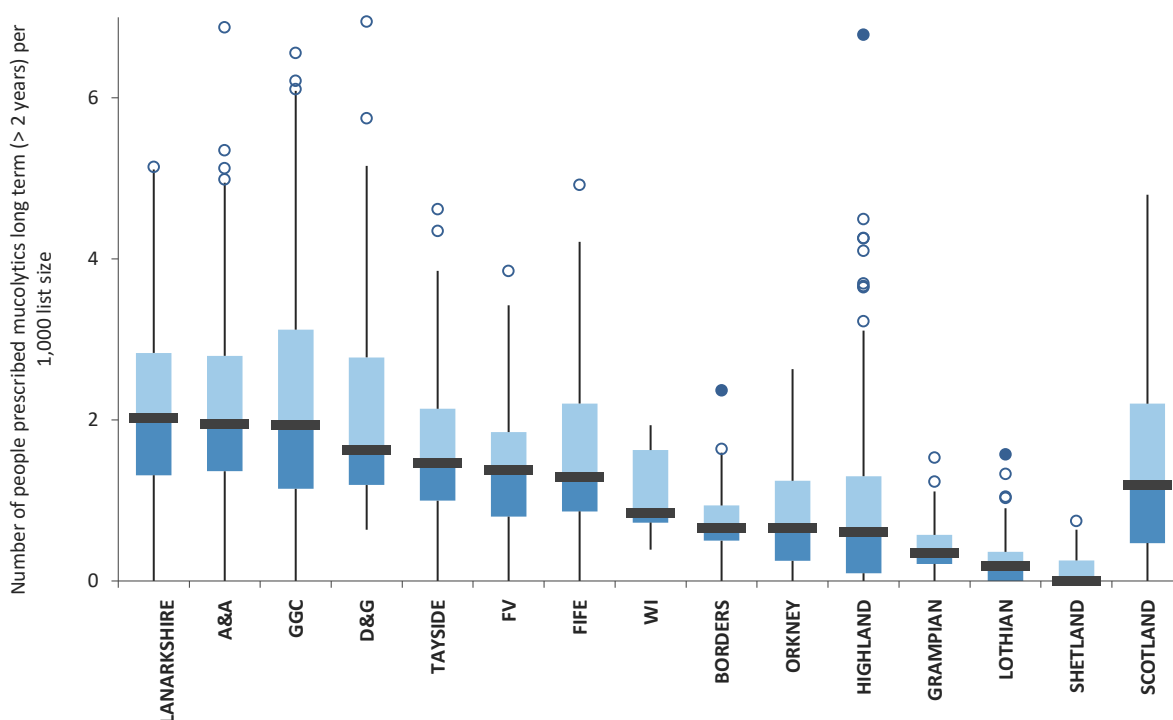
The analysis shows that prescribing of long-term mucolytics has increased over the last three years across Scotland and in all of the NHS Boards. On average there is nearly a 10-fold variation in prescribing between the NHS Boards (0.25 people per 1,000 list size in NHS Lothian compared to 2.30 in NHS Ayrshire and Arran). The NHS Boards with the greatest variation between their GP Practices are NHS Western Isles, NHS Highland, NHS Tayside, NHS Greater Glasgow & Clyde, NHS Lanarkshire; they all have interquartile ranges greater than 2%. There are 37 GP practices whose prescribing of mucolytics is identified as outlying within their NHS Board area.

Mucolytics - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: five outlier practices were not plotted; NHS Ayrshire & Arran 13.83, NHS Greater Glasgow & Clyde 8.53 7.68, NHS Highland 7.44, NHS Lanarkshire 7.2

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS Ayrshire & Arran	1.76%	3.29%	3.97%	5.12%	8.38%
NHS Borders	0.78%	2.04%	2.85%	3.53%	7.35%
NHS Dumfries & Galloway	0.43%	2.69%	2.92%	3.72%	6.37%
NHS Fife	1.08%	2.90%	3.74%	4.54%	8.26%
NHS Forth Valley	0.68%	2.71%	3.85%	4.67%	8.77%
NHS Grampian	1.35%	2.54%	3.20%	4.31%	6.95%
NHS Greater Glasgow & Clyde	0.00%	2.68%	3.60%	5.21%	14.29%
NHS Highland	0.00%	2.64%	3.56%	5.31%	9.83%
NHS Lanarkshire	0.78%	2.49%	3.54%	4.84%	9.40%
NHS Lothian	1.16%	3.12%	3.74%	4.92%	9.20%
NHS Orkney	0.00%	2.13%	2.78%	3.25%	6.80%
NHS Shetland	1.69%	2.71%	3.46%	4.01%	5.88%
NHS Tayside	0.46%	2.23%	3.37%	4.80%	8.12%
NHS Western Isles	0.00%	2.17%	3.67%	4.85%	11.46%
Scotland		2.65%	3.57%	4.80%	

†the measure identifies people prescribed mucolytics in the latest quarter and of them the proportion prescribed them long-term (>2 years)

Mucolytics: Number of people prescribed mucolytics long term (>2 years) per 1,000 weighted LS

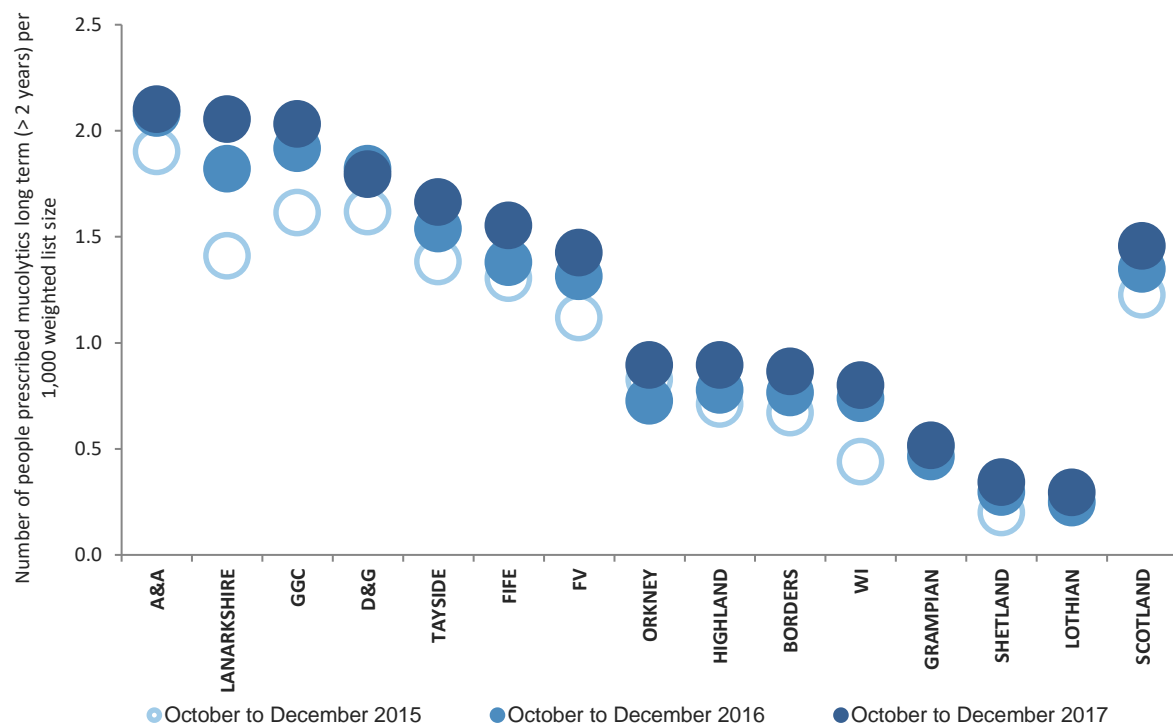
Indicator Group Respiratory **Drug Group** Mucolytics

[From: [Quality Prescribing for Respiratory – A Guide for Improvement 2018](#)]

The previous measure made available using the population figures that have been weighted to account for demographic variation. These weighted populations are available within the PRISMS and are based on the GP practice component of the NRAC formula (<http://www.isdscotland.org/Health-Topics/Finance/Resource-Allocation-Formula>).

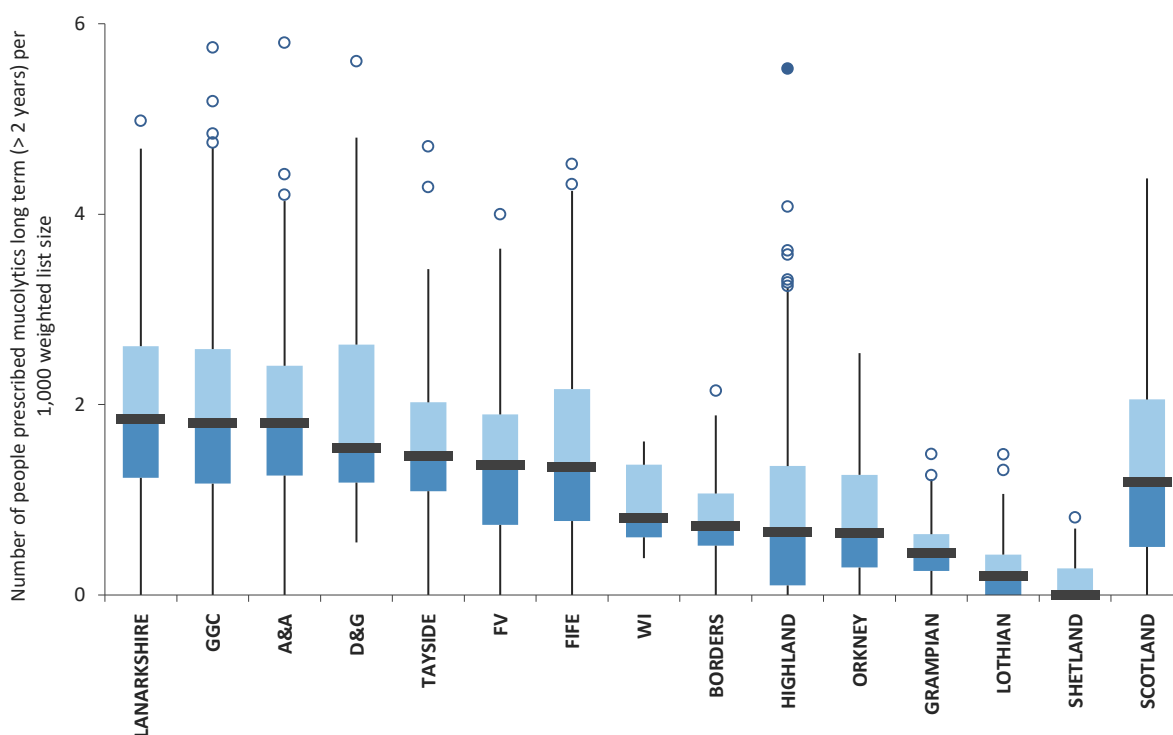
The analysis shows that prescribing of mucolytics has increased over the last three years across Scotland and in all of the NHS Boards. On average there is a 7-fold variation in prescribing between the NHS Boards (0.29 people per 1,000 weighted list size in NHS Lothian compared to 2.1 in NHS Ayrshire and Arran). The NHS Boards with the greatest variation between their GP Practices are NHS Dumfries & Galloway, NHS Greater Glasgow & Clyde, NHS Fife, NHS Lanarkshire; they all have interquartile ranges greater than 1.3%. There are 30 GP practices whose prescribing of mucolytics is identified as outlying within their NHS Board area.

Mucolytics - NHS Board Trend



The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



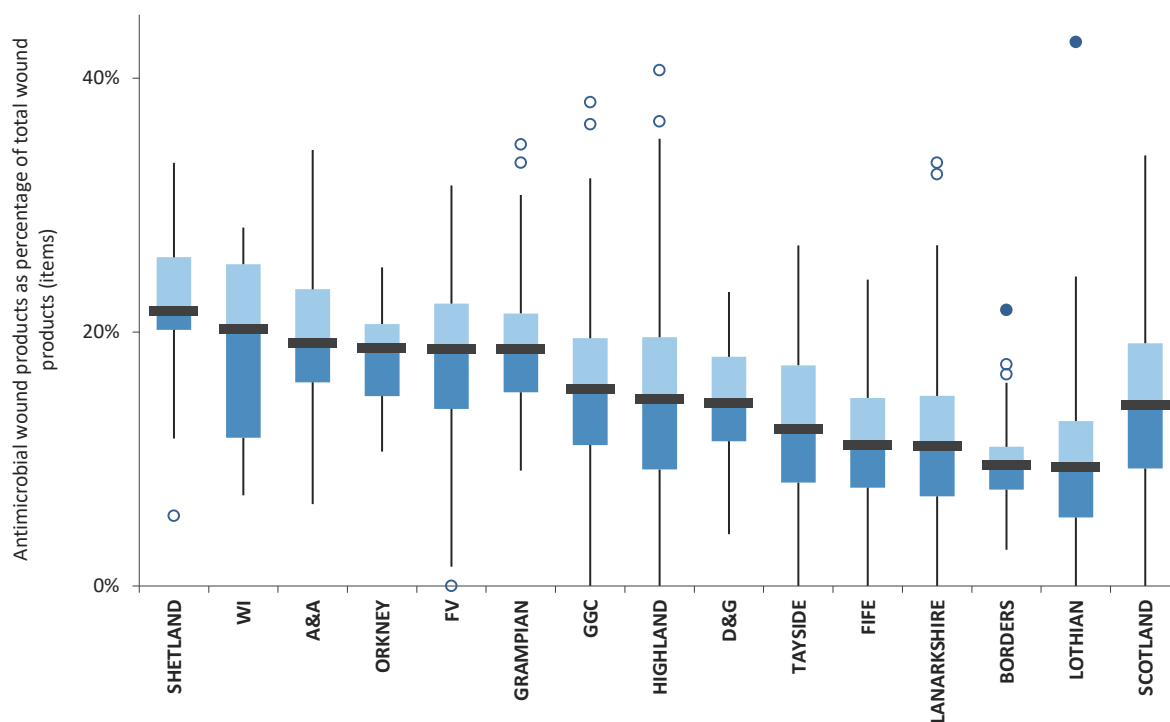
NB: three outlier practices were not plotted; NHS Ayrshire & Arran 9.67, NHS Greater Glasgow & Clyde 6.11, NHS Highland 6.09

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS Ayrshire & Arran	1.76%	3.29%	3.97%	5.12%	8.38%
NHS Borders	0.78%	2.04%	2.85%	3.53%	7.35%
NHS Dumfries & Galloway	0.43%	2.69%	2.92%	3.72%	6.37%
NHS Fife	1.08%	2.90%	3.74%	4.54%	8.26%
NHS Forth Valley	0.68%	2.71%	3.85%	4.67%	8.77%
NHS Grampian	1.35%	2.54%	3.20%	4.31%	6.95%
NHS Greater Glasgow & Clyde	0.00%	2.68%	3.60%	5.21%	14.29%
NHS Highland	0.00%	2.64%	3.56%	5.31%	9.83%
NHS Lanarkshire	0.78%	2.49%	3.54%	4.84%	9.40%
NHS Lothian	1.16%	3.12%	3.74%	4.92%	9.20%
NHS Orkney	0.00%	2.13%	2.78%	3.25%	6.80%
NHS Shetland	1.69%	2.71%	3.46%	4.01%	5.88%
NHS Tayside	0.46%	2.23%	3.37%	4.80%	8.12%
NHS Western Isles	0.00%	2.17%	3.67%	4.85%	11.46%
SCOTLAND		2.65%	3.57%	4.80%	

NB the measure identifies people prescribed mucolytics in the latest quarter and of them the proportion prescribed them long-term (>2 years)

The ranking of NHS Boards can change in the following chart because they use the median rather than the average of the measure

Practice Variation in Most Recent Quarter



NB: three outlier practices were not plotted; NHS Greater Glasgow & Clyde 75.0% 52.9%, NHS Ayrshire & Arran 46.0%

NHS Board	Minimum	Lower Quartile	Median	Upper Quartile	Maximum
NHS Ayrshire & Arran	6.45%	16.05%	19.11%	23.37%	46.15%
NHS Borders	2.86%	7.60%	9.52%	10.96%	21.74%
NHS Dumfries & Galloway	4.08%	11.41%	14.39%	18.06%	23.16%
NHS Fife	0.00%	7.75%	11.11%	14.82%	24.14%
NHS Forth Valley	0.00%	13.96%	18.66%	22.24%	31.55%
NHS Grampian	9.09%	15.26%	18.63%	21.48%	34.78%
NHS Greater Glasgow & Clyde	0.00%	11.11%	15.52%	19.51%	75.00%
NHS Highland	0.00%	9.18%	14.71%	19.60%	40.63%
NHS Lanarkshire	0.00%	7.06%	11.02%	14.97%	33.33%
NHS Lothian	0.00%	5.40%	9.41%	12.99%	42.86%
NHS Orkney	10.59%	14.96%	18.75%	20.64%	25.10%
NHS Shetland	5.52%	20.18%	21.64%	25.89%	33.33%
NHS Tayside	0.00%	8.14%	12.33%	17.39%	26.83%
NHS Western Isles	7.14%	11.68%	20.25%	25.35%	28.24%
SCOTLAND		9.26%	14.22%	19.12%	