Variations in general practitioners' prescribing patterns in Ireland: preliminary results

Motterlini N[1], Dimitrov BD[1], Bradley M[1], Bennett K[1,2], Fahey T[1].

[1]HRB Centre for Primary Care Research, Department of General Practice, Royal College of Surgeons in Ireland, Republic of Ireland.
[2]Department of Pharmacology and Therapeutics, Trinity College Dublin, Republic of Ireland.

Background

Evidence concerning variation in clinical practice has been accruing in the US with the advent of the Dartmouth Atlas Health Project (www.dartmouthatlas.org).
Information on practice variation raises important issues concerning efficacy, effectiveness and quality of healthcare delivered in national and international contexts.[1]

Objectives

This study was aimed at quantifying the variations in prescribing patterns of common drugs amongst general practitioners (GPs) in Ireland using the Health Service Executive Primary Care Reimbursement (HSE-PCRS) prescribing database.

Methods

Study population

Data was obtained from the Irish General Medical Services (GMS) scheme pharmacy claims database from the HSE-PCRS. Thirty percent of the Irish population is covered under the GMS scheme. The scheme is means tested and provides free health services to those who are unable to afford them, thus it over-represents socially-deprived populations. The GMS database contains routinely collected data from pharmacy claims for dispensed medications. All prescription items are coded using WHO's Anatomical Therapeutic Chemical (ATC) classification. Basic demographic information (age and sex) are recorded. No information on diagnosis or disease condition is available.

We analyzed all patients aged ≥15 years in the HSE-PCRS database between January and December 2010. First, we selected the ATC broad classes (e.g. J01, N02) that were most frequently prescribed, and second, we extracted the drug category with the highest prevalence of prescriptions within each class.

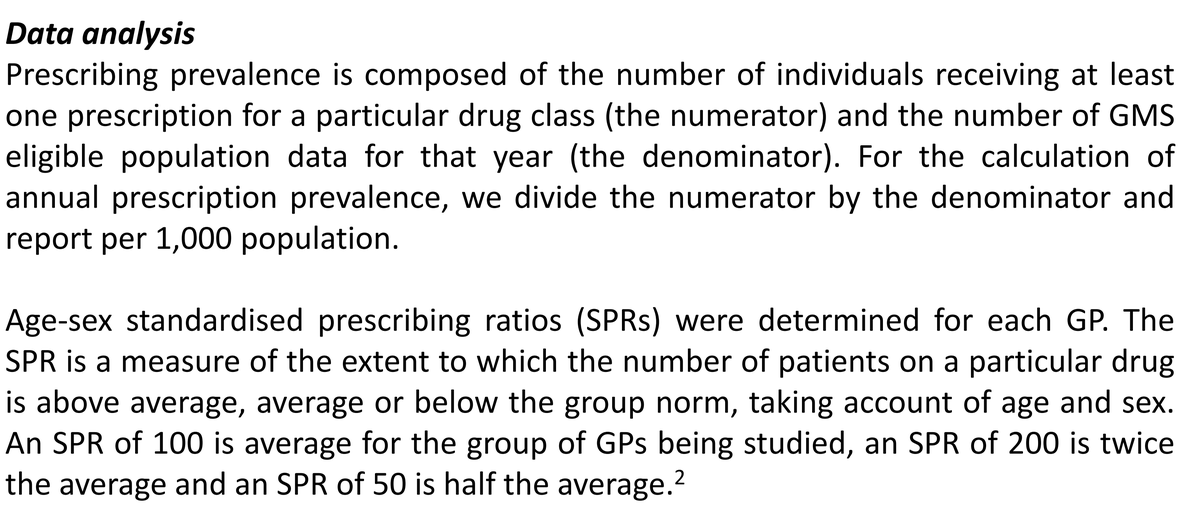
Data analysis

Prescribing prevalence is composed of the number of individuals receiving at least one prescription for a particular drug class (the numerator) and the number of GMS eligible population data for that year (the denominator). For the calculation of annual prescription prevalence, we divide the numerator by the denominator and report per 1,000 population.

Age-sex standardised prescribing ratios (SPRs) were determined for each GP. The SPR is a measure of the extent to which the number of patients on a particular drug is above average, average or below the group norm, taking account of age and sex. An SPR of 100 is average for the group of GPs being studied, an SPR of 200 is twice the average and an SPR of 50 is half the average.[2]

The variation in SPRs between GPs was measured and expressed by extremal quotient (EQ), coefficient of variation (CV%) and systematic component of variation (SCV) which represents the variation considered systematic, thus beyond chance.[3] The larger the values of these measures, the higher the variability in prescribing among GPs.

Figure 1: Prescribing prevalence per 1000 GMS population for drug category (2010)



Results

Descriptive statistics

During the study period, 2,261 GPs prescribed at least one medication for over 80% of the GMS eligible population (n=1,359,561).
Second line antibiotics (384/1000 GMS population) demonstrated the highest prescribing prevalence, while inhaled bronchodilators showed the lowest prevalence (112/1000 GMS population) among the drug categories analysed (Figure 1).

Practice variation

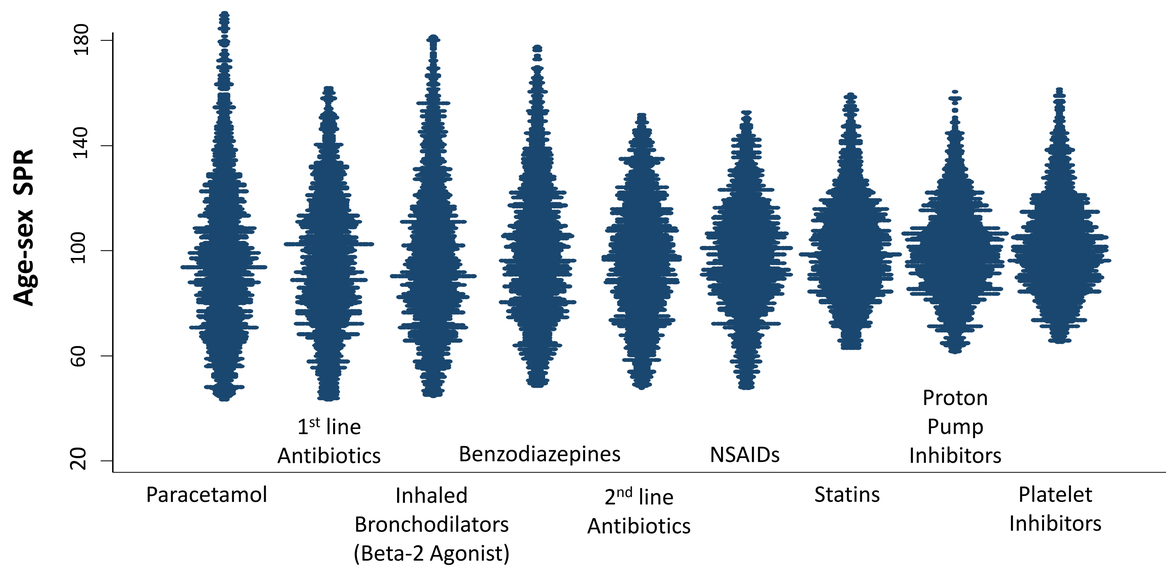
A consistency between the reported measures according to their relative magnitude of the variations was observed (Table 1). In terms of SCV, the greatest variation in prescribing were observed for paracetamol (6.82) and first line antibiotics (5.11). Proton pump inhibitors and platelet aggregation inhibitors had the lowest variations in prescribing (1.39 and 0.70, respectively) among the drug categories selected.

Table 1: Variation statistics for drug category (2010)

ATC class	Drug Category	EQ	CV	SCV
N02	PARACETAMOL	4.40	30.9%	6.82
J01	1st LINE ANTIBIOTICS	3.76	26.8%	5.11
R03	INHALED BRONCHODILATORS (BETA-2 AGONISTS)	4.05	29.3%	4.96
N05	BENZODIAZEPINES	3.65	26.4%	4.84
J01	2nd LINE ANTIBIOTICS	3.19	23.4%	3.82
M01	NSAIDs	3.22	22.0%	2.88
C10	STATINS	2.55	18.8%	1.54
A02	PROTON PUMP INHIBITORS	2.61	17.8%	1.39
B01	PLATELET INHIBITORS	2.47	17.9%	0.70

The distribution graphs in Figure 2 show the variation in SPRs across GPs for each drug category. Each blue dot represents one GP. The chart summarises two features of the data. The first is a measure of dispersion: the SPR for the highest GP is up to four times higher than the lowest GP, suggesting substantial variation. Secondly, the distribution graph shows that the variation is caused by several outliers, indicating that the variation is persistent and widespread across the country.

Figure 2: Age-sex standardised prescribing ratios (SPRs) for drug category (2010)



Conclusions

Preliminary analysis in relation to variation in GP prescription patterns in Ireland can provide very important and valuable information on practice variation and help prioritise future research studies to improve the quality of prescribing.
The observed variation for paracetamol and 1st line antibiotics prescribing is most likely due to variability in clinical indication (pain and infection). Lower variability for statins and platelet inhibitors reflects firmer clinical indication, for instance in secondary prevention of cardiovascular disease.

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Conflict of Interest Statement: The authors declare no conflict of interest.

Corresponding author: Nicola Motterlini, HRB Centre for Primary Care Research, RCSI Ireland, nicolamotterlini@rcsi.ie

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