Introduction
In recent years there have been growing concerns worldwide about the level of unnecessary and inappropriate antibiotic prescribing and the resultant antimicrobial resistance (AMR). International and national guidelines have been published looking at strategies to address AMR, for example the European Surveillance of Antimicrobial Resistance Surveillance System (EARSS) was established with funding by the European Commission. It is an international network of national AMR surveillance systems and is aimed at collecting comparable antimicrobial resistance data across Europe.

Methods
The HSE PCRS scheme, formerly known as the General Medical Services (GMS) scheme covers approximately 30% of the population of Ireland. The PCRS database was used to identify antibiotic usage patterns. The database holds data for all patients covered under the Drug Payment Scheme (DPS scheme). Antibiotics are coded using the WHO Anatomic Therapeutic Chemical (ATC) classification system. All antibiotic consumption data expressed in Defined Daily Doses per 1000 PCRS inhabitants per day is reported.

Results
Total DID consumption of all anti-infectives for systemic use (ATC J01) increased by 26% over the study period. Consumption of the penicillins (J01C), cephalosporins (J01D), macrolides (J01F), quinolones (J01M), tetracyclines (J01A), and sulfonamides (J01E) increased between January 2000 and December 2005. The penicillins group had the highest consumption throughout the study period accounting for 50% of the total outpatient antibiotic use. Total DIDs for this group increased by 25% between 2000 and 2005. Co-amoxiclav and amoxicillin account for 80% of the total consumption of this group of anti-infectives. With the exception of aminoglycosides and sulfonamides which demonstrated a decrease in DID consumption of 47% and 8% respectively, all other groups of anti-infectives had an increase in DID consumption of greater than 25% during the study period. The penicillins group had the highest consumption throughout the study period accounting for 50% of the total outpatient antibiotic use. Total DIDs for this group increased by 25% between 2000 and 2005. Co-amoxiclav and amoxicillin account for 80% of the total consumption of this group of anti-infectives. With the exception of aminoglycosides and sulfonamides which demonstrated a decrease in DID consumption of 47% and 8% respectively, all other groups of anti-infectives had an increase in DID consumption of greater than 25% during the study period.

For specific antibiotics there has been an increase in the total DIDs of doxycycline 95%, clarithromycin 43%, flucloxacillin 42%, phenoxymethylpenicillin 22%, and amoxicillin 9%. There was a decrease of 14% and 34% in the consumption of erythromycin and oxytetracycline respectively between 2000 and 2005. The quinolone group had the highest consumption within the database. The results are standardised for the PCRS eligible population for each year to account for changes in population and changes in antibiotic prescribing practices.

Conclusion
The aim of the study was to identify outpatient antibiotic consumption between January 2000 and December 2005 through analysis of the PCRS database. Total antibiotic consumption between January 2000 and December 2005 expressed in Defined Daily Dose per 1000 PCRS inhabitants per day increased by 26%. The penicillins group accounted for approximately 50% of the total outpatient antibiotic use. Total DIDs for this group increased by 25% between 2000 and 2005. Co-amoxiclav and amoxicillin accounted for 80% of the total consumption of this group of anti-infectives. With the exception of aminoglycosides and sulfonamides which demonstrated a decrease in DID consumption of 47% and 8% respectively, all other groups of anti-infectives had an increase in DID consumption of greater than 25% during the study period. Antibiotic prescribing data is a valuable tool for assessing public health strategies aiming to optimise antibiotic prescribing.
utilisation of antibiotic therapy in community practice

Total DID consumption of systemic antimicrobials (ATC class J01) increased by 25% between January 2000 and December 2005 on the PCRS scheme. Ferech et al.

Discussion

Total DID consumption of systemic antimicrobials (ATC class J01) increased by 25% between January 2000 and December 2005 on the PCRS scheme. Ferech et al.

The penicillins (ATC J01A) account for approximately 50% of all antimicrobial prescribing (ATC J01) on the PCRS scheme. Total antibiotics have increased by 25% from 2000 to 2005, amoxicillin and co-amoxiclav accounting for 80% of the total consumption in the South Eastern healthboard region for the year ended 2003.

The consumption of co-amoxiclav on the PCRS scheme increased by 80% within the study period, whereas total consumption of amoxicillin decreased by 9%. Similarly, in the Republic where consumption fell by more than 1 DID.

The proportion of outpatients presenting with acute respiratory tract infections (RTIs) has decreased over recent years. The National Institute for Health and Clinical Excellence (NICE) published guidance on the prescribing of antibiotics for RTIs in July 2008.

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The appropriate use of antibiotics is essential to maximise health outcomes for patients and to reduce the development of further antibiotic resistance. Patient resistance include steps to control antibiotic utilisation combined with efforts to control the spread of infection. The introduction of national targets for appropriate antibiotic control policies and effective infection control practices in both the hospital and community settings has placed an emphasis on two main strategies i.e. the appropriate and cautious use of antibiotic therapy both in the community and hospital setting with the guidance by the British Thoracic Society and European Respiratory Society are: a beta-lactam plus/minus macrolide therapy.

Monitoring of antimicrobial utilisation has been recognised as a major component in antimicrobial resistance strategies, including the Control and Antimicrobial Resistance and the Strategy for Antimicrobial Resistance in Ireland (SARI). Recommended targets for pressure and expectations often contribute to antibiotic prescribing even in situations where the value of such therapy is not entirely clear. The appropriate use of antibiotics is essential to maximise health outcomes for patients and to reduce the development of further antibiotic resistance. Patient resistance include steps to control antibiotic utilisation combined with efforts to control the spread of infection. The introduction of national targets for appropriate antibiotic control policies and effective infection control practices in both the hospital and community settings has placed an emphasis on two main strategies i.e. the appropriate and cautious use of antibiotic therapy both in the community and hospital setting with the guidance by the British Thoracic Society and European Respiratory Society are: a beta-lactam plus/minus macrolide therapy.

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unnecessary expenditure in a budget constrained health service. Linking antibiotic consumption to resistance data across the different healthboard regions in Ireland will provide a system for monitoring variations in antimicrobial consumption and resistance over time and help assess programmes against AMR.

References

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