Recommendations on Surveillance of Antibiotic Consumption in Ireland

Background

This discussion document is an interim report by the Antibiotic Consumption Surveillance Working Group, one of a number of working groups set up as part of the Strategy for the control of Antimicrobial Resistance in Ireland (SARI). The working groups were set up to develop recommendations on specific areas within SARI and are made up of representatives from relevant professional bodies. The working groups report to the SARI National Committee, which is based at the Department of Health and Children (DOHC). The membership of the SARI Antibiotic Consumption Surveillance Working Group is listed at the end of this document.

The draft recommendations contained in this document are being disseminated for consultation and comment prior to producing final recommendations. As such many of the details of proposed surveillance systems for antibiotic consumption have been omitted, such as detailed data set composition, specific information technology requirements etc. Once the broad principals of antibiotic consumption surveillance requirements are agreed more detailed recommendations can be developed.

Rationale

Surveillance of antibiotic consumption has been identified as a key component in antimicrobial resistance strategies, including the WHO Global Strategy of Containment of Antimicrobial Resistance and the Strategy for Antimicrobial Resistance in Ireland (SARI). Like all surveillance activities antibiotic consumption surveillance implies information for action and should be seen as an essential tool for quality improvement in healthcare. The principal functions of antibiotic consumption surveillance can be summarised as follows:

- Identification of antibiotic utilisation patterns, at local, regional and national levels
- Estimation of drug expenditure, for cost-benefit analyses of policies and prescribing interventions
- Inform local, regional and national policies and prescribing interventions
- Geographic and temporal linking of antimicrobial use to antimicrobial resistance (AMR) patterns
- Early warning of abnormal usage patterns and targeted interventions
- Audit of antibiotic stewardship programmes
- Research

Key requirements

In order to provide useful data, a surveillance system for antibiotic consumption should fulfil the following criteria:

- Timely data collection, analysis and dissemination

    - The European Surveillance of Antimicrobial Consumption (ESAC) protocol recommends monthly data with a maximum turn-around time for analysis and dissemination of six months
- Representative of total population
    - Ideally data should be available on all antimicrobial use. Failing this sample populations should be representative of the population as a whole
- Surveillance of antimicrobial use in all areas of healthcare
    - This will include community medical practice, hospitals, dental care and long-term care institutions.
- Minimum data set to allow regional and international comparisons
    - The WHO recommend that sufficient data be gathered to allow community prescribing data to be expressed as defined daily dose (DDD) per 1000 inhabitants per day and hospital data to be expressed as DDD per 100 bed days

In addition to these key requirements there should be facilities for collecting more detailed clinical data, including the indication for therapy, and patient demographic data. Some of this data may only be available through intermittent prevalence studies or sentinel practice surveillance schemes.

It should also be possible to stratify hospital data according to ward/unit, as well as being able to distinguish GP community prescribing from prescribing originating from outpatient clinics and A&E departments.

Draft Recommendations

1: European Surveillance of Antibiotic Consumption (ESAC) requirements

ESAC is an attempt to harmonise surveillance of antimicrobial consumption between European countries and is similar in structure to the European Antimicrobial Resistance Surveillance System (EARSS), in which Ireland participates. A draft protocol for ESAC was agreed in November 2001. The aim is to produce a database on antimicrobial consumption in all EU member states, which will include past and current data at regional, national and international levels. Unfortunately Ireland is now the only European country unable to produce national antibiotic consumption data.

Data should be gathered using a continuous drug utilisation monitoring system and should be available on a monthly basis, with a delay in data recording not exceeding six months. Data should be available for both ambulatory and hospital care and should be analysed and reported quarterly.

Antibiotics are coded using the WHO Anatomic-Therapeutic-Chemical (ATC) classification and Defined Daily Dose (DDD) is used as the unit of measurement of antibiotic consumption. Both ATC classification and DDD are internationally agreed surveillance standards, allowing direct comparison of antibiotic consumption data between countries.

For ESAC surveillance purposes community antibiotic consumption is expressed as DDD per 100,000 population per day and hospital antibiotic consumption is expressed

as DDD per 100 bed days, which is in line with WHO recommendations for surveillance of antibiotic consumption.

National level data should be available for Ireland in line with ESAC requirements, though some limitations will apply, as detailed below.

2: Surveillance of community antibiotic consumption using GMS data

The GMS Payments Board receives copies of all prescriptions written for GMS patients as part of pharmacists' claims for payments. These data can quantify the number of prescriptions written for a particular antibiotic, e.g. amoxycillin and the number of tablets per prescription. These prescriptions do not provide any information on the source of the script or the indication for treatment. The GMS scheme only covers about one third of the population, though it accounts for about two thirds of all prescriptions. Nevertheless, the data available through the GMS scheme is very detailed and is comparable to data collected through surveillance scheme in other European countries.

Other potential sources of community prescribing include the Drug Payment Scheme (DPS) and commercial data from IMS-Health. A major limitation on DPS data is that prescriptions are only processed through this scheme if an individual patient or family submits a claim for reimbursement and this can only be done if they exceed the threshold expenditure of €65 per month. This introduces a number of selection biases such that the most expensive antibiotics and patient with long-term illnesses or multiple courses of antibiotics would be over-represented. In addition the data collected under DPS is more limited than GMS data, as it is based on pharmacy receipts rather than original prescriptions. For these reasons the working group agreed that DPS data should not be used for routine surveillance of antibiotic consumption.

IMS Health collects prescription drug consumption data from wholesalers and a sample of GPs. There are a number of limitations to this data for surveillance purposes including sample biases, no data on what is actually dispensed, small regional samples and no data on direct sales from manufacturers to pharmacies. The working group agreed that commercial data is not suitable for routine surveillance of community antibiotic consumption, though it may be useful as an adjunct to other data sources or as an audit tool.

GMS data is forwarded to the National Centre for Pharmacoeconomics (NCPE), which is based at St. James' Hospital in Dublin. Working with NCPE national community antibiotic consumption can be measured and expressed as DDD per 100,000 GMS population per day. Such data should be available on a quarterly basis and broken down by health board region.

A full-time pharmacist is required at NCPE for antibiotic consumption surveillance, at an estimated cost of €32,000 per year. This appointment would allow:

- Quarterly reporting of community antibiotic consumption, in line with ESAC requirements
- Detailed analysis of national level data by antibiotic class, patient age, gender etc.
- Identification of seasonal trends in prescribing

- Identification of targets for antibiotic stewardship interventions
- Economic analysis of antibiotic use and cost-benefit analyses
- Audit of antibiotic stewardship interventions and educational campaigns

At present there is a significant delay in receipt of GMS data at NCPE, such that timely surveillance is not possible. Discussions are ongoing between NCPE and the GMS payments board to ensure that data is received by NCPE in a timely fashion. This should allow quarterly data analysis with a reporting delay of no more than three months.

3: Surveillance of non-GMS community antibiotic use

Although the data collected within the GMS system is comprehensive it only represents prescribing for about one third of the population. Given that GMS prescribing accounts for about two thirds of all prescriptions there are clearly differences in prescribing practice between GMS and non-GMS patients. Therefore it is not possible to accurately assess antibiotic consumption for the entire population from GMS data alone. Given the limitations of DPS and IMS-Health data for surveillance of community antibiotic consumption a further system is required to assess non-GMS antibiotic consumption.

A sentinel surveillance system should be set up, using data from a geographically representative sample of community pharmacies. This would be similar to the current GP sentinel surveillance system for influenza and other infections. A representative sample of urban and rural pharmacies should be included from each health board region, with sample size relative to regional population. Data collection should be based on automated download from pharmacy computer systems. The level of data in pharmacy computer systems is generally such that DDD per given population can be determined. Prescriber details may not be recorded in such computer systems and would not be relevant to this surveillance system, given its sentinel nature.

4: Options for surveillance of hospital antibiotic consumption

All hospital pharmacies should record quarterly antibiotic consumption data. This data should be available from pharmacy stock management software systems and, when combined with hospital discharge data, should allow hospital antibiotic consumption rates to be expressed as DDD per 100 bed days.

Consumption data would be based on antibiotic acquisition and distribution data. In the absence of computerised prescribing systems it will not be practical to routinely collect data on individual prescriptions. Such data may, however, be collected as part of local or regional prescribing audits (see below). Hospitals should be able to provide data to ward/unit level, so that antibiotic consumption can be stratified by type of unit (e.g. intensive care versus non-intensive care antibiotic use).

Pharmacy data should be linked to hospital discharge data, collected as part of the Hospital In-Patient Enquiry (HIPE) scheme. HIPE data will allow antibiotic consumption data to be stratified by patient age profiles, disease profiles and other indicators of hospital activity.

IMS-Health has recently started collecting data from 37 hospital pharmacies in Ireland, representing about two thirds of the Irish hospital drug market. Data on drug acquisition and distribution are collected on a monthly basis. IMS-Health is currently validating the data collection system, which was previously managed by a different company, to ensure that the data are accurate and complete and hope to be able to start reporting data in mid-2003. The company hope to recruit further hospitals to the scheme from mid-2003 onwards. Data collected under this scheme could be used, on an interim basis, for national hospital antibiotic consumption surveillance.

In the long term surveillance of hospital antibiotic consumption will require data collection from as many hospitals as possible. If the number of hospitals participating in the IMS-Health scheme is significantly increased and is geographically representative this data may suffice for national hospital antibiotic consumption surveillance.

5: Options for local and regional antibiotic consumption surveillance

Local and regional surveillance of antibiotic consumption will have different requirements to national level surveillance. In general more detailed data and greater feedback of data to individual prescribers will be needed. The functions of antibiotic consumption surveillance specific to local and regional needs include:

- Linking prescribing data to local and regional antibiotic resistance data
- Linking prescribing data to clinical outcome data, such as adverse drug reactions, length of hospital stay etc.
- Regional planning of antibiotic stewardship initiatives
- Local and regional audit of stewardship initiatives
- Direct educational feedback for prescribers
- Local prescribing audits

The Regional SARI Committee in each health board area should coordinate regional antibiotic consumption surveillance. Regional committees should also have access to disaggregate regional antibiotic consumption data, which may not be available at national level.

For routine surveillance at local and regional levels the same data sources used for national surveillance will largely suffice, though the level of data collected and fed back to data providers will differ. For community antibiotic consumption surveillance regional GMS data should be used. This should be analysed to district electoral division (DED) level. GPs should receive a regular summary of their own GMS prescribing data. Ideally this should be linked to educational or quality improvement initiatives, as is the case with some Health Board primary care units at present.

Where local community antibiotic stewardship programmes are taking place more comprehensive surveillance of local pharmacy data may be required, to include non-GMS prescribing. This will require the cooperation of local GPs and pharmacists participating in the stewardship programme.

For routine local hospital antibiotic consumption surveillance pharmacy drug acquisition and distribution data should suffice. Monthly data should be reported as

DDD per 100 bed days and broken down by ward/unit. This data should be fed back to individual prescribers. Where possible prescribers should receive a regular summary of their own prescribing and, as with community prescribing, this should be linked to educational or quality improvements. Many hospitals already have local antibiotic consumption surveillance, based on routine pharmacy data, in place.

Local periodic prescribing audits will also be needed, particularly in the setting of local antibiotic stewardship programmes. In such audits additional data not available through routine surveillance may be collected and analysed. This may include individual drug dosages, duration of therapy, indication for therapy, clinical outcome, adverse drug reactions etc. Such prescribing audits will be resource intensive and time consuming and should therefore only be carried out in the light of specific local objectives.

Membership of SARI Antibiotic Consumption Surveillance Working Group

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(Chair)

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