The ATC/DDD system -
International language for drug utilization research
A drug classification system represents a common language for describing the drugs marketed in a country or region. This is a prerequisite for national and international comparisons of drug utilization data, which have to be collected and aggregated in a uniform way.

Access to standardised and validated information on drug use is essential to monitor drug utilization patterns, identify problems in drug use, initiate educational or other interventions and to monitor outcomes of these interventions. The main purpose of having an international standard is to enable comparison of data between countries. A classification system will have its advantages and limitations and its usefulness will depend on the purpose, the setting used and the user’s knowledge of the methodology.

The ultimate goal of drug utilization research is to assess whether drug therapy is rational or not. For the individual patient, rational use of a drug implies the prescription of a well documented drug at an optimal dose and affordable price.

Without knowledge of how drugs are being prescribed and used, it is difficult to initiate a discussion on rational drug use or to suggest measures to improve prescribing habits. Drug utilization research in itself does not necessarily provide answers, but it contributes to rational drug use in important ways.

Anatomical Therapeutic Chemical (ATC) Classification System

In the ATC classification system, drugs are divided into 14 main groups according to the organ or system on which they act and their chemical, pharmacological and therapeutic properties.

Drugs are classified according to their main therapeutic use, on the basic principle of only one ATC code for each route of administration.

The complete classification of metformin illustrates the structure of the code:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Alimentary tract and metabolism (1st level, anatomical main group)</td>
</tr>
<tr>
<td>A10</td>
<td>Drugs used in diabetes (2nd level, therapeutic subgroup)</td>
</tr>
<tr>
<td>A10B</td>
<td>Blood glucose lowering drugs, excl. insulins (3rd level, pharmacological subgroup)</td>
</tr>
<tr>
<td>A10BA</td>
<td>Biguanides (4th level, chemical subgroup)</td>
</tr>
<tr>
<td>A10BA02</td>
<td>Metformin (5th level, chemical substance)</td>
</tr>
</tbody>
</table>

Thus, in the ATC system all plain metformin preparations are given the code A10BA02.
**Defined Daily Dose (DDD)**

The defined daily dose (DDD) is a unit of measurement used as a tool for presenting drug utilization statistics. The basic definition of this unit is:

*The DDD is the assumed average maintenance dose per day for a drug used for its main indication in adults.*

Sales or prescription data presented in DDD/1000 inhabitants/day may provide a rough estimate of the proportion of the population within a defined area treated daily with certain drugs. For example, 10 DDD/1000 inhabitants/day may indicate that an average 1% of the population receives treatment daily. This estimate is only useful for drugs used in the treatment of chronic diseases when there is good agreement between the average prescribed daily dose and the DDD.

*The ATC classification system and DDD measuring unit have become the gold standard for international drug utilization research and are recommended by WHO.*

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**WHO Collaborating Centre for Drug Statistics Methodology**

This Centre is located at the Norwegian Institute of Public Health and is linked to the WHO Headquarters in Geneva.

The Centre is responsible for developing and maintaining the ATC/DDD methodology. The main activities are to:

- classify drugs according to the ATC system
- assign DDDs for drugs which have been assigned an ATC code
- review and revise as necessary the ATC classification system and DDDs
- stimulate and influence the practical use of the ATC system by cooperating with researchers in the drug utilization field

The Centre receives expert advice from the WHO International Working Group for Drug Statistics Methodology. This Working Group represents the 6 WHO global regions and consists of 12 WHO appointed experts in clinical pharmacology, clinical medicine, international public health, drug utilization and drug regulation.

The Working Group is responsible for the scientific development of the ATC/DDD system and is consulted when questions of principle character arise. All new ATC codes, DDDs and decisions concerning ATC and DDD alterations are discussed and approved by the Working Group.
Publications

*Guidelines for ATC classification and DDD assignment*

The Guidelines include detailed information of the principles for ATC classification and DDD assignment.

*ATC index*

This index provides a complete overview of all ATC codes. It is sorted alphabetically by ATC code and by non-proprietary drug name (INN).

The guidelines and index are updated annually and are available electronically and in hard copies. Spanish and German versions of the publications are also available.

*Introduction to Drug Utilization Research*

This booklet provides a brief introduction into drug utilization research based on the ATC/DDD methodology. It is available in PDF format from WHO at: http://www.who.int/medicines

*Website*

For further information about the ATC/DDD methodology and order forms for the publications, please refer to the WHO Collaboration Centre website (www.whocc.no). A searchable version of the ATC index is available free of charge.

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