Pharmacovigilance: monitoring the safety of medicines

Introduction

Pharmacovigilance (PV) is the monitoring of medicine use for negative outcomes, or 'adverse events'. A more formal definition is 'the science and practice relating to the detection, assessment, understanding, and prevention of adverse effects or any other medicine-related problem.' The World Health Organisation (WHO) established its Programme for International Drug Monitoring in response to the thalidomide disaster revealed in 1961. This marked the beginning of international pharmacovigilance.
The company that holds the marketing authorisation for a medicine, the Marketing Authorisation Holder (MAH), has a legal obligation to continuously collect data and ensure pharmacovigilance. Data must be transmitted to the authorities within defined timelines, and any emerging concern about the benefit-risk balance must be brought to their attention immediately. If necessary, the authorities may request further investigations, including formal studies. Regulatory procedures exist for the processes of updating product information and implementing other safety measures.

Pharmacovigilance basics: Aims and scope

Pharmacovigilance activities aim to:

- improve patient care and safety in relation to the use of medicines and all medical
- interventions,
- improve public health and safety in relation to the use of medicines,
- contribute to the assessment of benefit, harm, effectiveness, and risk of medicines,

and

- promote understanding, education, and clinical training in pharmacovigilance.

The scope of pharmacovigilance activities covers:

- Small molecule medicinal products, usually derived from chemical synthesis
- Herbal medicines and dietary supplements
- Traditional and complementary medicines
- Blood products
- Biologics (medicines derived from a biological source or living cells, such as
- antigens or vaccines)
- Medical devices
- Substandard medicines and counterfeit medicines

Benefit-risk balance

Medicines may affect the body in unintended, harmful ways. These effects, called side effects or adverse reactions, represent the risks of medicines (see section 'Adverse events' below). By the time a new medicine obtains a marketing authorisation, the medicine has been tested and the data have allowed the conclusion to be drawn that the benefits of the medicine outweigh its risks (pre-marketing status). However, once the

medicine has obtained a marketing authorisation (post-marketing status), it will be used in normal healthcare settings for many patients who may differ from the study population (who were selected on defined criteria), for example by age or by having additional diseases. In addition, rare side effects might become evident only during extended periods of use as opposed to the limited time periods of clinical trials. It is therefore, important to identify any new or changing risks of a medicine as quickly as possible, and to take measures to minimise risk and promote safe and effective use.

Adverse events

An adverse event (AE) is any negative or harmful medical occurrence in a patient treated with a medicinal product, whether or not the AE is considered to be associated with that product. An AE does not necessarily have a causal relationship with the treatment. Some examples of AEs are:

- Suspected interactions with other medicines (medicine-medicine interactions),
- Drug abuse,
- Medication errors (such as taking too much of the medicine),
- Product technical complaints,
- Events resulting from overdose,
- Lack of expected medicine effect,
- Worsening of illness after the use of a product, **and**
- Birth defects and other events after use of the product during pregnancy.

A Serious Adverse Event (SAE) involves:

- Death,
- An immediately life-threatening event,
- Hospitalisation or extended hospitalisation,
- Significant or persistent disability,
- Birth defect or congenital anomaly, **or**
- Any important medical event that may jeopardise the patient or might require
- intervention(s) to prevent one of the outcomes listed above.