

7. INHALATION DRUG DELIVERY GLOSSARY

Actuation – The delivery of one dose of drug from an inhalation device.

Actuator – A component (usually plastic) which allows the patient to activate the metering valve on an MDI and deliver a precise dose of drug through the mouth to the lungs.

Albuterol – One of a class of drugs referred to as 2-agonists. These agents stimulate 2 receptors and cause relaxation of smooth muscle; they are used in the management of asthma.

Antiarrhythmic – A drug that works to restore the normal regular rhythm of the heart.

Asthma – An obstruction respiratory condition characterized by attacks of breathlessness, wheezing and varying in severity from hour to hour and day to day. Although it can develop at any age, the illness often starts in childhood and tends to improve or clear up in early adulthood. The familiar form of asthma is more correctly called bronchial asthma, which can be classified into two main types: *extrinsic* (when an allergy triggers an attack) or *intrinsic* (when there is no apparent external cause).

Atmosphere – Consists of layers of gases above the Earth's surface. The troposphere extends for 8-15 km and is then surrounded by the stratosphere which extends up to a height of 50 km.

Bioavailability – The amount of a drug that is available to exert a pharmacological action.

Bio-adhesive – A substance that allows compounds to adhere to one another, but that is only active once in the body.

CDV – Consistent Dose Valve

CFC – Common abbreviation for a class of fully-halogenated organic compounds known as chlorofluorocarbons, containing only carbon, fluorine and chlorine.

CFC-free – Common abbreviation for propellants free of chlorofluorocarbons. Most commonly used to describe hydrofluoroalkanes (HFAs).

Canister – A can, typically made of metal, which after being assembled with a valve contains the drug and propellant formulation.

Chemotherapy – The treatment of any given disease by chemical substances, often used when referring to the treatment of cancer.

Compliance – Taking a drug in the manner prescribed by a healthcare professional.

Corticosteroids – A group of drugs similar to the natural corticosteroid hormones produced by the cortex of the adrenal glands, often prescribed to prevent an asthma attack because of their anti-inflammatory and anti-allergy properties.

Elastomer – A component used in the production of inhalation devices that ensures that the drug and excipients are contained within the device.

FDA – Food and Drug Administration

First-pass effect – Drugs that are ingested orally must pass through the liver, where they undergo metabolism, before entering the bloodstream. This “effect” often results in a reduced amount of active drug available to reach the site of action and means that drugs may have to be given in higher doses to compensate for this. Drugs administered via inhalation, injection, or through patches, however, are not subject to first-pass effect, and therefore, may be administered in lower doses.

Formulary – A list of drugs, often found in hospitals or doctor’s surgeries/offices that clinicians are allowed to prescribe. Prescribing drugs not on the formulary is often not allowed, except under special circumstances.

Gene Therapy – The treatment or prevention of diseases (especially heritable) by genetic engineering:

- The replacement of a missing or defective gene
- The inhibition of inappropriate gene function
- The uses of genes to enhance production of immune system components, i.e., cytokines to reinforce the body’s immune response to a disease.

Hydrofluoroalkanes (HFA) – A class of compounds used as propellants to manufacture metered-dose inhalers. HFAs have been accepted by environmental and healthcare regulatory agencies as environmentally safe alternatives to chlorofluorocarbons (CFCs).

Menopause – The phase during a woman’s life when the production of estrogens and progestogens ceases. This may occur naturally or be a result of surgery, that removes the ovaries and/or uterus.

Metered-dose inhaler (MDI) – A device that contains drug in a liquid suspension or solution and uses a propellant to “fire” a measured dose of drug consistently over time.

Montreal Protocol – A framework for regulating the use of chlorofluorocarbons (CFCs). Established in 1987, the Protocol mandated a complete phase-out of CFC production in both industrialized and developing countries with timelines that are reviewed on an annual basis.

Ozone – A form of oxygen containing three atoms instead of the two found in molecular oxygen.

Ozone layer – The common description of the region in the stratosphere between the altitudes of 15 and 40 km where the abundance of ozone maximizes.

Parenteral – An administration route for drugs via injection. This may be intravenously (into a vein), subcutaneously (under the skin) or intramuscularly (into a muscle).

Peptide – A compound formed by the union of two or more amino acids.

Pharmacokinetic – The properties of a drug in the body over time.

Polymer – Any naturally occurring or synthetic substance with large molecules made up of a repetitive series of smaller units.

Propellant – An agent used in aerosols to ensure that contents of the formulation are delivered effectively.

Prophylactic – A drug, procedure or piece of equipment used to prevent disease.

Protein – Molecules that consist of one or more polypeptide chains. These polypeptides are formed by the union of 40 to over 4000 amino acids.

Salbutamol – One of a class of drugs referred to as 2-agonists. These agents stimulate 2 receptors in the lung and cause relaxation of smooth muscle; they are used in the management of asthma.

Valve – An assembly of components which regulates the flow of drug formulation from the canister of an MDI by precisely metering a predetermined amount to be delivered to the patient.