Worksheet 15.1

Chapter 15: Medicines and drugs – glossary

Acid indigestion  A feeling of discomfort from too much acid in the stomach.

Addiction  When a patient needs a drug in order to feel normal, and suffers withdrawal effects if
the drug is not taken.

AIDS  Acquired immune deficiency syndrome. It is caused by the virus known as HIV.

Alginates  Chemicals added to antacids which enable them to float to the top of the stomach and
prevent reflux into the stomach.

Amantadine  An antiviral drug. It works by preventing the entry of virus particles into cells.

Amphetamine  A group of stimulant drugs that mimic and enhance the effects of adrenaline.

Analgesic  Drugs which act to reduce pain.

Analogues  Chemically related compounds which can be compared for their potential as lead
compounds in drug development.

Antacid  A medicine containing a weak base which acts to neutralize excess stomach acid.

Antibacterial  A chemical substance which inhibits or kills bacteria.

Antibiotic resistance  Occurs when certain bacteria in a population are not inhibited by an
antibiotic because they have developed resistance to its effects.

Antibodies  Chemicals produced by the body in response to specific foreign bodies, known as
antigens.

Antifoaming agents  Chemicals which prevent flatulence and bloating by absorbing excess gas.

Antipyretic  A drug that reduces fever.

Antiviral  A medicine which is designed to combat viral infections.

Asymmetric synthesis  The process of producing only a single enantiomer of a chiral drug.

Benzodiazepine  A major group of depressants which includes Valium and Mogadon. They
contain benzene rings and heterocyclic rings, and are able to cross the blood-brain barrier
effectively.

Beta-lactam ring  A four-membered ring in the penicillin molecule which is responsible for its
antibacterial properties.

Bioavailability  The percentage of a dose of drug that reaches the bloodstream.

Blood clotting  The process where blood thickens and solidifies on exposure to air to prevent
excess blood loss following injury.
Breathalyzer  A device for measuring the concentration of ethanol in a sample of breath, which can be used to assess the blood alcohol concentration. Roadside devices usually use a photocell to determine the extent of reduction of Cr (VI) to Cr (III) by ethanol.

Chiral auxiliary  A chiral molecule which temporarily binds to a reactant, ensuring that only one enantiomer of the product molecule is obtained.

Chiral drugs  Drugs which exist as mirror-image forms known as enantiomers, due to the existence of a chiral carbon atom.

Combinatorial chemistry  The automated synthesis of a very large number of chemically related compounds in drug design trials.

Compound libraries  The storage of information on the results of synthesizing and testing lead compounds in drug design trials.

Computer-aided design  The use of computer software to model the interaction between a drug and its target. It helps in the design of molecules that give an optimal fit.

Dependence  This occurs when a patient needs a drug in order to feel normal, and suffers from withdrawal symptoms if a drug is not taken.

Depressant  A drug which acts through the central nervous system to lower the activity of major organs, such as the heart and brain.

Dimethicone  An antifoaming agent present in some antacids that reduces flatulence and bloating.

Dosing regime  The amount and frequency of the intake of a drug.

Drug  A chemical that affects how the body works, including changes for the better and the worse.

Enantiomer  One of two mirror-image forms of a molecule. Different enantiomers of a drug frequently have different physiological effects.

Esterases  Enzymes which break down the ester groups. They act in the conversion of the pro-drug, heroin, into the active form, morphine, in the brain.

Fever  An increased body temperature, usually associated with an illness or disease.

Gas–liquid chromatography  A technique that can be used for measuring ethanol concentration in blood or urine.

Gastric juice  A secretion from the stomach lining that contains digestive enzymes and hydrochloric acid. It has a pH of about 2.

Hallucinogen  A drug which causes hallucinations – realistic perceptions which have no basis in reality.

Heartburn  Acid from the stomach rising into the oesophagus. It is also called acid reflux.

High-throughput screening  The use of robotics and micro-scale chemistry to test large numbers of candidate drug molecules against a large number of targets.

HIV  Human immunodeficiency virus, the virus which causes AIDS.
HIV-positive  Refers to people who are infected with the HIV virus and have the likelihood of developing AIDS.

Hypnotic  When the dosage of a depressant drug may cause respiratory depression and can lead to a coma and death.

Indole ring  A structure containing a benzene ring attached to a five-membered heterocyclic ring. It is found in many hallucinogens.

Infrared spectroscopy  An analytical technique that enables the C–H bond in ethanol to be detected, and its concentration to be measured. It is used in an intoximeter for giving a more accurate reading of blood alcohol levels than a breathalyzer.

Intoximeter  A device for measuring ethanol concentration in the blood by the use of infrared spectroscopy or a fuel cell.

Intramuscular  The injection of a drug into a muscle.

Intravenous  The injection of a drug directly into the bloodstream.

Lead compound  A compound which is believed may have some therapeutic effects. It is usually the starting point for drug development.

Medicine  A substance that improves health.

Memory cells  Cells which enable the body to fight a repeat invasion of the same organism more effectively.

Methamphetamine  A drug which is a modified amphetamine. It is a very powerful and dangerously addictive drug.

Mild analgesics  Analgesics which lower pain by inhibiting the stimulation of the nerve endings at the site of injury.

Narcotic  A drug that acts on the brain and so may bring about changes in behaviour and mood.

Neurotransmitters  Chemicals that act as messengers in the nervous system, for example noradrenaline.

Nicotine  A stimulant drug present in the leaves of the tobacco plant.

Non-narcotic  Drugs that do not interfere with the functioning of the brain.

Noradrenaline  A neurotransmitter in the sympathetic nervous system. It is very similar in structure and physiological effects to the hormone adrenaline.

Opioid drugs  Drugs derived from opium, an extract of poppy seeds. They include codeine, morphine and heroin.

Pain receptors  Sensory structures which detect pain and send nervous impulses to the brain.

Parallel synthesis  A type of combinatorial chemistry in which each reaction flask contains only a single product.

Parenteral  The administration of a drug by injection.
Penicillinase  An enzyme produced by bacteria which have developed resistance to the antibiotic penicillin. The enzyme breaks the beta-lactam ring of the penicillin, so rendering it inactive. It is also sometimes known as beta-lactamase.

Penicillin G  The major component of the extract from the mould Penicillium that shows antibiotic properties.

Phagocytosis  The uptake and destruction of invading organisms by white blood cells, known as phagocytes.

Pharmacophore  The part of a drug that is responsible for its activity.

Placebo effect  Occurs when patients gain a therapeutic effect from their belief that they have been given a useful drug, even when they have not.

Prostaglandins  Chemicals released at a site of injury which stimulate pain receptors.

Racemate  A mixture containing equal concentrations of the two enantiomers of a molecule. It is optically inactive.

Rational drug design  The process of drug design where a molecule is designed to interact with a suitable biological target, such as an enzyme or DNA.

Retrovirus  A virus, such as HIV, which carries its genetic information in the form of RNA rather than DNA.

Reverse transcriptase  An enzyme which catalyzes the synthesis of DNA from RNA in retroviruses.

Reye’s syndrome  A rare and potentially fatal liver and brain disorder, which can be caused by aspirin consumption in children.

Sedative  When the dosage of a depressant drug induces sleep, but may also cause slurred speech, altered perception and staggering gait.

Side-effect  An unintended effect of a medicine.

Stereoisomerism  A type of isomerism where the molecules differ from each other in their three-dimensional or spatial arrangements. It includes geometric and optical isomerism.

Stimulant  A drug which acts on the brain to increase its activity and so heightens the state of mental awareness.

Strong analgesics  Analgesics that lower pain by blocking the transmission of pain signals between brain cells. They thus act to alter the perception of pain.

Subcutaneous  The injection of a drug directly under the surface of the skin.

Sulfonamide  A class of drugs that includes some of the earliest antibiotics.

Superbugs  Bacteria that carry several resistant genes and so cause infections that are difficult to treat.
**Sympathetic nervous system**  Part of the nervous system. It stimulates the pathways that increase the heart rate, blood pressure, air flow to the lungs and mental awareness.

**Sympathomimetic**  Drugs, such as the amphetamines, that stimulate the sympathetic nervous system.

**Synergistic effects**  Effects where the action of one drug is enhanced by the presence of another.

**Therapeutic effect**  The beneficial effect of a medicine or drug.

**Therapeutic window**  The target range of drug concentration in the blood, between its therapeutic level and its toxic level.

**Tolerance**  Occurs when a patient loses sensitivity to the action of a drug and requires increasingly higher doses to receive the therapeutic effect.

**Tranquilizer**  When the dosage of a depressant drug induces calmness, relief from anxiety and very relaxed muscles.

**Transpeptidase**  A bacterial enzyme involved in forming the cell walls of bacteria. It is inhibited by the antibiotic penicillin.

**Ulcer**  Damage to the lining of part of the intestinal tract.

**Withdrawal symptoms**  The symptoms which occur when a patient does not take a drug to which they have become dependent.