

Medicinal Chemistry & Drug Discovery

Section 1.1.1 – Unmet Medical Need



Learning goals

- describe the attributes of unmet medical needs
- assess whether a disease qualifies as an unmet medical need

Vocabulary

- unmet medical need
- orphan disease
- rare disease
- neglected tropical disease

Drug companies create drug programs around **unmet medical needs** – inadequately addressed health concerns.

Key qualities of unmet needs:

- disease with no existing or satisfactory therapy
The need may apply to all patients with a disease or a subset of the patient pool.
- demand for an effective therapy
A disease that affects more patients has greater demand and urgency.

It is possible for a disease to have few patients and still represent an unmet need. Such diseases normally have severe health consequences. These diseases are often called **orphan** or **rare diseases**. Some countries provide incentives to encourage research on rare diseases.

Below are four diseases that are qualified as either *unmet* medical needs or *met* medical needs.

- Alzheimer's disease
Beyond the early stages of Alzheimer's disease, patients have no effective drugs. Alzheimer's disease also affects a sizeable percentage of the ageing population. Alzheimer's disease is definitely an *unmet medical need*.
- high blood pressure (hypertension)
Many people around the world have high blood pressure, but many drug classes have been developed for treating hypertension. Example drug classes are the angiotensin-converting enzyme (ACE) inhibitors, beta-receptor blockers, and calcium channel blockers. High blood pressure is a reasonably well *met medical need*.
- Chagas disease
Chagas disease is a parasitic infection that can lead to congestive heart failure. Infections are primarily in South and Central America. While Chagas disease can be treated, it is often not diagnosed and leads to long-term health risks. Chagas disease is considered a **neglected tropical disease** or **NTD**. NTDs affect tropical and subtropical regions of the world. The World Health Organization (WHO) maintains a list of NTDs. Chagas disease is an *unmet medical need*.

- diabetes

Diabetic patients have many available drugs. In advanced stages, almost all diabetics require insulin injections, which are painful and pose an infection risk. An orally available form of insulin would be of great benefit to patients and therefore is an *unmet medical need*.

Based on these discussions, even diseases with existing treatments can be considered unmet medical needs. Determining an unmet need requires understanding the disease, available therapies, and possible gaps in treatments. Drug companies continuously research the healthcare field for unmet medical needs.