



# **Chequers Academy**



## **Cannulation and IV Infusion Management**

### **Introduction**

## Introduction to IV Therapy

Intravenous (IV) therapy is a critical component of modern medical practice, providing a direct route for administering fluids, medications, and nutrients into the bloodstream. This method is essential in various healthcare settings, including emergency rooms, surgical theatres, outpatient clinics and home care environments. IV therapy ensures rapid and efficient delivery of therapeutic agents, making it indispensable for treating a wide range of conditions.

### Historical Background

The concept of IV therapy dates back to the 17th century, but significant advancements were made in the 19th and 20th centuries. The discovery of blood transfusion techniques and the development of aseptic procedures laid the groundwork for modern IV therapy. Innovations in catheter technology and infusion pumps have further refined the practice, enhancing its safety and efficacy.

### Importance of IV Therapy

IV therapy is used for multiple purposes, including:

- **Fluid Replacement:** Essential for patients suffering from dehydration, severe burns, or during surgery.
- **Medication Administration:** Allows for the delivery of antibiotics, pain relief medications, chemotherapy, and other drugs with high precision and rapid onset.
- **Nutrient Delivery:** Critical for patients who cannot ingest food orally, such as those with gastrointestinal disorders.
- **Blood Transfusions:** Vital for treating anaemia, blood loss from trauma or surgery, and certain medical conditions.

## Scope of IV Therapy

IV therapy is utilised across various medical fields:

- **Emergency Medicine:** For rapid administration of lifesaving medications and fluids.
- **Oncology:** To administer chemotherapy and manage side effects.
- **Paediatrics:** For hydration and medication delivery in young patients.
- **Geriatrics:** Addressing the unique needs of elderly patients with complex medical conditions.
- **Home Care:** Providing long-term treatments outside hospital settings, improving patient comfort and reducing healthcare costs.

## Importance of IV Therapy in Aesthetics

IV therapy in aesthetics offers several benefits, including:

- **Hydration:** Replenishes fluids, leading to healthier, more radiant skin.
- **Nutrient Delivery:** Provides essential vitamins and minerals that support skin health, boost energy, and enhance overall well-being.
- **Detoxification:** Aids in the removal of toxins from the body, improving skin clarity and vitality.
- **Anti-Aging:** Delivers antioxidants and other anti-aging compounds that help reduce wrinkles and improve skin elasticity.

## Benefits of IV therapy:

### 1. Rapid Drug Delivery

- **Immediate Effect:** Medications and fluids administered intravenously enter the bloodstream directly, resulting in rapid onset of action, which is crucial in emergency situations.

- **Precise Control:** Dosages can be accurately controlled, adjusted quickly, and titrated to the patient's needs.

## 2. Enhanced Absorption

- **Complete Bioavailability:** IV administration ensures 100% bioavailability of the medication, as it bypasses the digestive system, avoiding issues with absorption that can occur with oral medications.

## 3. Hydration and Nutrient Delivery

- **Rehydration:** Effective for rehydrating patients who are dehydrated or unable to take fluids orally, such as those with severe gastrointestinal issues, burns, or heatstroke.
- **Nutrient Administration:** Essential nutrients and electrolytes can be delivered directly to patients who cannot eat or absorb nutrients orally, such as those with severe malnutrition or gastrointestinal disorders.

## 4. Treatment of Severe Infections

- **Antibiotic Delivery:** High doses of antibiotics can be administered directly to combat severe infections, ensuring quick and effective treatment.

## 5. Pain Management

- **Analgesics:** IV administration of pain medications allows for rapid pain relief, especially in acute situations like post-surgical pain or trauma.

## 6. Chemotherapy

- **Cancer Treatment:** Chemotherapeutic agents can be administered precisely to manage cancer, allowing for optimal dosing and monitoring of patient response.

## 7. Blood Transfusions

- **Critical for Patients:** Necessary for patients with severe anaemia, blood loss, or conditions that affect blood cell production, ensuring the immediate replacement of lost blood.

## 8. Managing Electrolyte Imbalances

- **Rapid Correction:** IV therapy can quickly correct imbalances in electrolytes, such as potassium, sodium, calcium, and magnesium, which are crucial for various bodily functions.

## 9. Administration of Emergency Medications

- **Life-Saving Interventions:** In emergencies (e.g., cardiac arrest, anaphylactic shock), IV administration of medications such as epinephrine, atropine, or vasopressors can be life-saving due to the rapid onset of action.

## 10. Controlled Drug Delivery

- **Continuous Infusion:** IV therapy allows for the continuous infusion of medications, providing steady therapeutic levels, which is essential for drugs with a narrow therapeutic window.

## 11. Patient Comfort

- **Avoiding Gastrointestinal Side Effects:** Medications that cause irritation or other side effects when taken orally can be administered IV, reducing discomfort for the patient.
- **Convenience:** IV therapy can be more convenient for patients who have difficulty swallowing pills or have severe nausea and vomiting.

## In Aesthetics setting

### Wellness

Wellness is more than just health and refers to a diverse range of factors that includes everything from emotions to environment.

I.V. drips can help to improve physical wellness and improve emotional wellness such as depression and anxiety. The nutrients help the body to stay balanced and to function normally. Clients will feel healthier and have better mental clarity.

The body requires a certain intake of vitamins and nutrients to maintain normal functionality. The exact levels vary from person to person and diet and daily activities may make it difficult for the body to receive the minimum required nutrients it requires. Impaired absorption reduces the ability to convert these nutrients effectively into usable energy for cells.

I.V. drip therapy improves overall wellness by providing over 90% of the vitamins and nutrients the body needs to:

- Fight off colds and flu
- Improve overall health
- Boost energy
- Improve anxiety and depression
- Combat fatigue
- Accelerate wound healing
- Improve cognitive function and mental clarity
- Maintain the strength of the muscles

### Heals Skin

I.V. therapy is a blend of vitamins, nutrients and antioxidants that can improve the health and strength of the skin, hair and nails. The anti-oxidants target free radicals, which are molecules that contribute to ageing and tissue damage. Biotin and glutathione naturally reduce the appearance of wrinkles, repair UV damage and help the body to remove toxins.

I.V. therapy can improve the skin by:

- Preventing free radical damage
- Slowing down the ageing process
- Strengthening the skin, nails and hair
- Brightening the skin
- Improving blemishes
- Reducing the appearance of wrinkles

## Physiology

### Fluids, Electrolytes and I.V. Therapy

- One of the primary objectives of I.V. therapy is to restore and maintain fluid and electrolyte balance. To understand how I.V. therapy works to restore fluid and electrolyte balance, let's first review some basics of fluids and electrolytes.
- The human body is composed largely of liquid. These fluids account for about 60% of total body weight in an adult who weighs 155lb (70.5kg) and about 80% of total body weight in an infant.

### Fluid Functions

What functions do body fluids provide? They:

- Help regulate body temperature.
- Transport nutrients and gases throughout the body.
- Carry cellular waste products to excretion sites.

## Understanding Body Fluid Distribution

- When fluid levels are optimum, the body performs at its best; however, when fluid levels deviate from the acceptable range, organs and systems can quickly become congested.
- Maintaining fluid balance in the body involves the kidneys, heart, liver, adrenal and pituitary glands, and nervous system. This balancing act is affected by:
  - Fluid volume.
  - Distribution of fluids in the body.
  - Concentration of solutes in the fluid.
- Every day the body gains and loses fluid. To maintain fluid balance, the gains must equal the losses. Fluid volume and concentration are regulated by the interaction of two hormones: antidiuretic hormone (ADH) and aldosterone.
  - **ADH**, sometimes referred to as the water-conserving hormone, affects fluid volume and concentration by regulating water retention. It is secreted when plasma osmolarity increases or circulating blood volume decreases and blood pressure drops.
  - **Aldosterone** acts to retain sodium and water. It is secreted when the serum sodium level is low, the potassium level is high, or the circulating volume of fluid decreases.

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