Introduction

1. INTRODUCTION

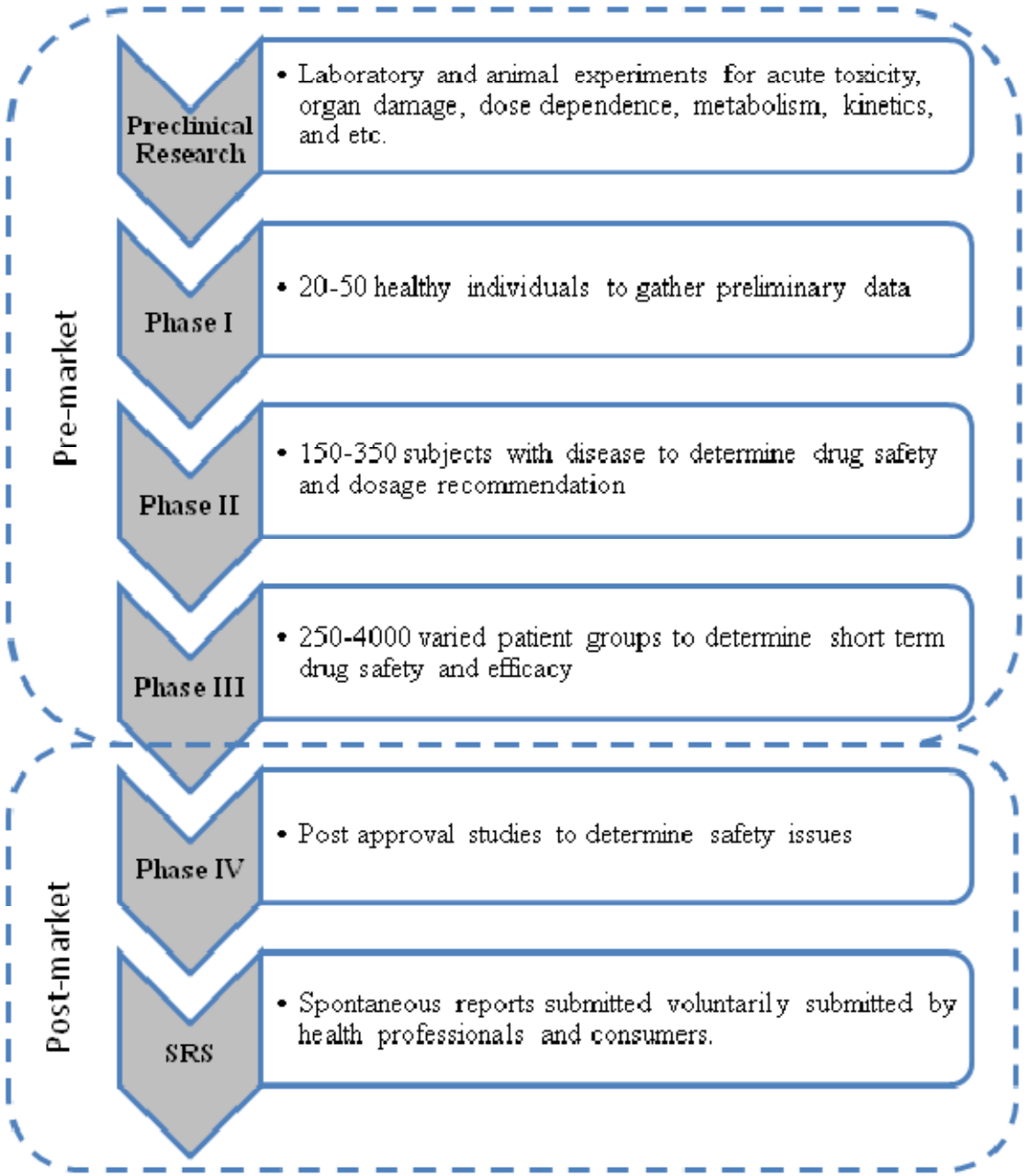
Medicines have, beyond any doubt, proved to be a boon for humanity and it fights against disease and suffering. However, like most other useful things, medicines come with inherent risks associated with their use, called Adverse Drug Reactions (ADRs). These reactions, though mild in most cases, have the potential to cause disability and even death. ADRs are often referred to as "any noxious and unintended effects of a drug that occurs at doses normally used in human beings for the prophylaxis, diagnosis or therapy of disease, or for modification of physiological function [1]. They account for approximately 4.2-6.0% of all hospital admissions and they occur in about 10-20% of all hospitalized patients [2, 3]. The overall incidence of serious ADRs is 6.7% and that of fatal is 0.32% [4]. It has been estimated that every year around 1,06,000 people die in the United States of America (USA) because of ADRs which would make these reactions fourth leading cause of death after heart diseases, cancer and stroke [4]. The estimated cost of mortality and morbidity related to ADRs in USA is more than $75 billion annually [5].

The adverse impact that ADRs have on patients' health and the economic burden associated with it makes it important to thoroughly evaluate each and every drug, in pre-clinical toxicity studies and in clinical trials, for all potential harmful effects, before releasing it in the market. However, in general, the conditions of clinical trials are highly controlled (e.g. direct medical supervision, no significant exposure to other drugs, absence of co-morbidities, exclusion of children, pregnant women and elderly from the trial). Therefore, they do not necessarily reflect the way the product will be used in real life conditions [6]. Also, rare and late adverse

reactions may go undetected in a trial because of limited trial size and duration. Thus, continuous ADR monitoring is required throughout the lifecycle of a drug to ensure drug safety.

Pharmacovigilance, also referred as drug safety surveillance, is the science that concerns with the detection, assessment, understanding, and prevention of ADRs [7]. Pharmacovigilance can be broadly divided into two categories: (1) pre-marketing surveillance - ADRs are identified during pre-clinical testing and phases I to III clinical trials; and (2) post-marketing surveillance - ADRs are identified post authorization of drug and throughout the life cycle of the drug as presented in Figure 1 [8]. Spontaneous Reporting System (SRS) being the most widely used method of pharmacovigilance is often regarded as cornerstone of pharmacovigilance which rely on physicians, other Health Care Professionals (HCPs), and consumers/patients to report any suspected ADR to the national pharmacovigilance center, manufacturer or to the regulatory body. Despite of the successful contribution of SRS to pharmacovigilance, under-reporting remains a major drawback of this system [9-11]. It has been estimated that even serious suspected adverse reactions are only reported in 5-15% of all incident cases [12-14]. This high rate of under-reporting can delay signal detection and consequently lead to negative impact on public health. Thus, the contribution of HCPs and patients in reporting of ADRs is enormously significant.

Figure 1: Pharmacovigilance at Different Stages of Drug Development



Studies from different settings in India indicate inadequate knowledge, attitude, and deficit practices of ADR reporting among HCPs [15-19]. Although, India has joined the pharmacovigilance programme in 1989, but it is still in infancy [20]. The problem is caused due to under-reporting of ADRs, circulation of a large number of counterfeit and substandard products into the market, the irrational use of drugs and lack of reporting culture HCPs. The reporting rate of ADRs in India is below 1% as compared to worldwide reporting rate which is 5% [21]. Given the lower rate in India, it is important to increase awareness on ADR monitoring among HCPs.

In addition to HCPs, consumers/patients plays cardinal role in pharmacovigilance as they can expedite the process of ADR detection [22]. It promotes better understanding of ADRs as the reports coming from patients are more direct, detailed and explicit than indirect reports from HCPs. At present, Direct Patient Reporting (DPR) system exist in 44 countries and contribute to 9% of the total ADR reports, the remaining are coming from HCPs [23].

Thus, the present study aims to create awareness among HCPs and patients; thereby, promoting the culture of ADR reporting. Furthermore, the study was undertaken to intensively monitor ADRs in patients on haemodialysis for which the Indian data is limited. Thus, contributing to enhancement of existing pharmacovigilance practices at All India Institute of Medical Sciences (AIIMS).