

## Advancements in Pharmacology and Its Effect on 'Health-Care' Industry



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**The tremendous pharmacological advances witnessed during the last few decades have revolutionize virtually all aspects of modern life, including our understanding of disease. New drugs have contributed significantly to the economic impact of new developments in health care.**

**With recognition that the pace of pharmacological development and acquiring of new knowledge will certainly accelerate in the coming years, let us consider what these advances might hold for Pharmacological advancement, Pharmacology is the branch of biology concerned with the study of drug action, where a drug can be broadly defined as any natural, or endogenous (from within body) molecule which exerts a biochemical and/or physiological effect on the cell, tissue, organ, or organism.**

Pharmacology has always been an innovative field of study bestriding biochemistry, chemistry, physiology, clinical medicine, mathematics, and engineering. Pharmacology always seeks to explore and validate novel therapeutic strategies to improve human life from ideas and modification drawn from consideration of numerous fields of study. In this manner, pharmacology is special within biomedical research in that it has always enforced cross-cutting thinking; soon the value of this concept had become widely realized. Given the belief of pharmacology on

numerous disciplines, technological advances have often had a collaborative and profound impact on design and discovery of new molecule. For example, our enhanced compassionate of the genome and gene regulation has discovered new therapeutic targets.

Understanding the implacable diversification and development of gene families across the species has allowed identification of ever more definite targets that can be considered for pharmacological administration, both in the primary research field and in clinical development phase. Overture in structural biology that allow visualization of molecular contacts between pharmacological probes and their protein targets provide a means to both enhance model of new ligands and better recognize their molecular mechanisms, and speed up the discovery cycle. At the same time, the assessment of multicellular systems through the help of molecular path promises to reveal deeper insight into development of both life and disease, building opportunities for innovation and discovery.

Pharmacology has deliberately served scientists for more than 40 years by discovery on many fronts while establishing a high standard for pharmacological research and novel drugs, a attitude that has made it a leading place for publication of accurate and insightful experimental product. Pharmacology will always remain devoted to publishing the very high quality experimental results examine the pharmacological principles and mechanisms underlying drug action and tendency.

Pharmacology is considered to be the dynamic force behind advancement in healthcare and, when we look at the amount of change and recent innovations, many find it hard not to agree with that observation. The Revolutionary changes in

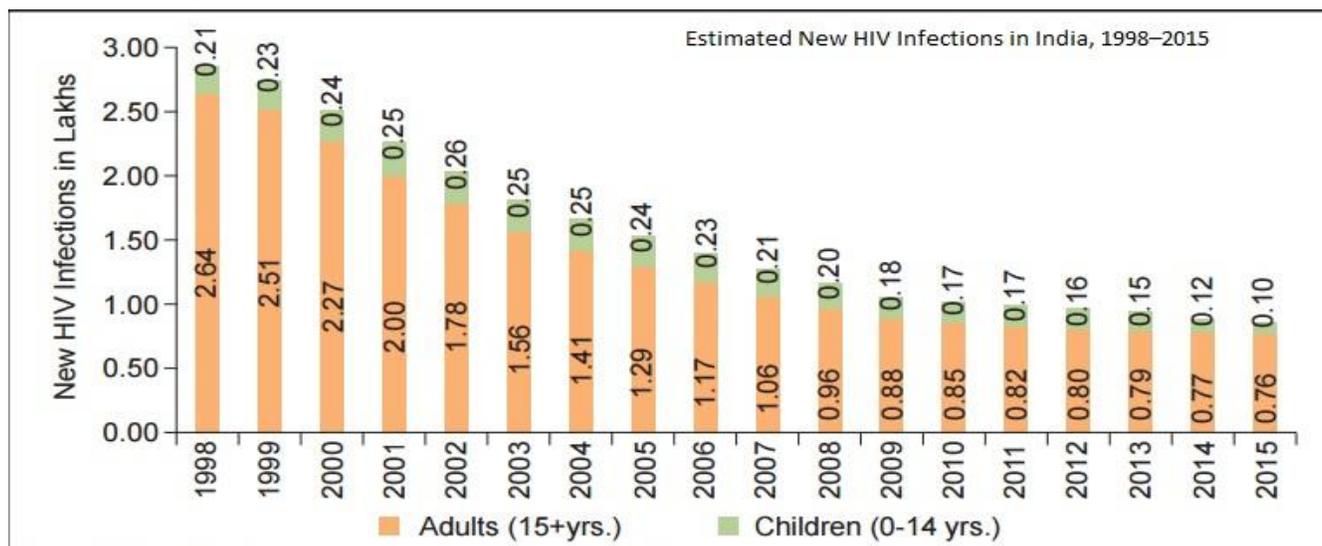
healthcare and Medicine, with the discoveries and inventions like Penicillin, Cardiac Pacemaker, DNA mapping, various heart and brain transplants and etc. the average human life expectancy has been increased up to 25 years. Pharmacological advancement today affects every single aspect of modern society, from pharmaceutical to biomedical and healthcare industry out there that hasn't been affected by the hi-tech advancement. Whether we are talking about molecular diagnostics, interactions, toxicology, chemical biology, therapy, and medical applications they all rely on pharmacology in one

way or another. But nowhere is this endless impact more likely than in the field of pharmaceutical and healthcare. Pharmacological development is revolutionizing the way healthcare is being conveyed. Modern technology has changed the structure and organization of the entire Healthcare field. An advance in pharmacology naturally involves closeness with and a willingness to grasp multiple disciplines. The idea, coupled with the operation of new technology and new approach to complex problems delivers pharmacology, at its best, it also helped in understanding health-related issues.

## NEW MEDICINES: CHANGING LIVES AND MANAGING HEALTH CARE COSTS

### NEW DRUG THERAPIES FOR HIV

Thousands of researchers globally are comprehensively studying HIV, developing therapies, and designing and implementing prevention methods including a thus-far elusive vaccine. The rise in research efforts has empowered enormous medical advances, especially in therapeutics. The development of exceptionally active antiretroviral therapy, a combination of molecule, completely changed the aspect of HIV treatment. Since then, the HIV/AIDS death rate has fallen by 83% in the United States and 60% in Asian Countries. Today, a newly diagnosed young adult who receives combination HIV therapies according to fixed guidelines can expect to live 50 more years. a study by University of Chicago economists reports that the cumulative value of improved survival resulting from new HIV therapy since the start of the epidemic and into the future is \$1.4 trillion. Current HIV therapies not only help the person with HIV but also cut down the risk of transmitting the HIV virus to others. Major advances have been accomplish across a ample range of diseases and conditions, including cardiovascular disease, rheumatoid arthritis, and many others, as discussed below.



Source: National Aids Control Organization(2015-16) HIV Data, India

### CARDIOVASCULAR DISEASE (CVD)

Cardiac arrest constitutes a major health problem with miserable prognosis. After a decade of efforts

scientist has developed new heart drug, these advancements have the potential to change the practice of medicine. A new class of drugs, given by

injection just twice a month, can reduce harmful LDL cholesterol levels by about 50%. They can help patients who have not benefited adequately from existing therapies.

### **DIABETES**

Ten new classes of diabetes Drug have been discovered in recent years, providing dynamic new treatment tools to fight the disease. People who have recently diagnosed with diabetes can now expect to live longer than those diagnosed 10 or 15 years ago. And while heart disease is a constant complication of diabetes, today people with diabetes who take medicines are 31% less likely to develop lipid disorders such as high cholesterol and 13% less likely to develop high blood pressure. In the past few years, the pharmacokinetic properties of insulin preparations have been altered by mixing with substances that delay absorption (eg, protamine and zinc) and by varying particle size. Modification in amino acid sequence of the insulin B chain leads to the development of rapid-onset and ultra-short-acting insulin preparations.

### **RHEUMATOID ARTHRITIS (RA)**

New disease-modifying therapies, in combination with older medicines, can seriously slow disease breakthrough, transforming the lives of people with this debilitate condition. A study showed that patients using combined treatment (adalimumab and methotrexate) had a 50% chance of complete remission, compared with a 28% chance among those taking only the older treatment.

### **OSTEOPOROSIS**

Osteoporosis treatment significantly reduces fracture risk, and people who consistently take their osteoporosis treatment have a 25% lower rate of fracture compared with people who are low supportive on other. In past year scientists are also investigating new molecule, called vitamin D analogs, as potential osteoporosis treatments. This analog is a supercharged version of vitamin D supplements molecules that have been modified, depending on vitamin D's structure, to reduce bone loss and maximize bone formation.

### **CANCER**

It has taken scientists more than a century to develop new molecule for cancer therapy. The number of people diagnosed with melanoma has risen clearly over the last two decades and is continuing to increase worldwide.

In 2016, an estimated 76,380 adults in the United States were diagnosed with melanoma of the skin. In 2014 FDA approved two molecules (pembrolizumab and nivolumab) and in research studies, both proved to be even more effective than previous treatment, while causing fewer adverse effects.

### **MANAGING HEALTH CARE COSTS**

Improving the quality of life and value of health care and controlling its cost are essential for our economy. New treatment plays an important role in achieving these goals. Managing health care costs is very important given the large and growing number of population with chronic conditions that can lead over time to serious complications.

Of course, due to global inequities in health care approach and delivery, these trends and overture are of far more importance to those in developed nations. The excessively valuable potential of probable pharmacological advancements, such as gene therapies, drugs for HIV and Cancer hopefully advancements in healthcare delivery keep footstep.

I would assert that the explosive footstep of pharmacological research and the doubling rate of pharmacological knowledge has in part been directed by pharmacological advances, which can provide the means with which to test biological hypotheses, a means to quantify pharmacological paradox and drugs with which to check treatment of disease.

Without any doubt, pharmacology is crucial to people's health and better quality of life. It also contributes millions of dollars to the economy. There are many benefits that pharmacology carries to the table when it comes to healthcare. Toward this end, we believe that Pharmacology will always be an important impetus of advances in the Healthcare Industry in the coming decade.