

OUR RESOURCES, SKILLS AND CAPABILITIES

MEDICINES

Differentiated and effective

Our track record of pharmaceutical innovation spans seven decades and includes many world-leading medicines that continue to make a difference for millions of patients worldwide.

Our medicines are targeted at important areas of healthcare. Several of them are world leaders and all of them are designed to be innovative, effective and offer added benefits for patients, such as reduced side effects or better ways of taking the treatment. In many cases, they are built on decades of shared knowledge among our scientists and on partnerships between people working in the laboratories and those working with doctors, patients and our other stakeholders to gain the insight we need to maintain a flow of new, targeted medicines that make a meaningful difference in healthcare.

These relationships have helped us develop families of medicines – generation by generation – such as the hormone-based cancer treatments we have discovered since the 1970s, including *Nolvadex* (tamoxifen), *Faslodex*, *Zoladex* and *Arimidex*. Among other benefits, these have played a part in increasing the five year survival rate for women with breast cancer from under 70% 50 years ago to around 90% today.

Even after a new medicine is launched, we continue to explore all the ways it can be used to get the most benefit for patients. We have clearly defined life cycle management programmes for our marketed products designed to optimise both the benefit they bring to patients' lives and their commercial potential within the timeframe that patent protection is available to us.

For example, originally introduced for treating asthma, *Symbicort* is now also used to combat chronic obstructive pulmonary disease, the fifth greatest cause of death worldwide. We also continued to look at how we could further improve *Symbicort* as an asthma therapy and we now market *Symbicort* Maintenance and Reliever Therapy (*Symbicort SMART*). *Symbicort SMART* represents a change in medical practice because it puts patients more in control of their variable disease by combining both the maintenance therapy and rapid relief treatment in a single inhaler, instead of the usual two. Further information about our range of Respiratory medicines can be found on page 63.

When we first launched *Seroquel*, our treatment for schizophrenia, it was particularly welcomed by patients and physicians for the benefits it offered in terms of effective control coupled with a favourable side-effect profile. More recently, in response to the need for a wider choice of medicines that offer more convenient dosing, we introduced *Seroquel XR* extended release tablets, a once-daily therapy for adults. *Seroquel* is also used to manage both bipolar mania and bipolar depression, helping more people around the world to lead normal lives. Further information about our range of Neuroscience therapies can be found on page 56.

Gastro-oesophageal reflux disease (often called 'heartburn') can significantly affect the sufferer's quality of life and, if left untreated, can cause serious problems such as stomach ulcers or cancer of the oesophagus. We introduced the world's first proton pump inhibitor, *Losec*, a breakthrough treatment at the time, and have since developed an improved therapy, *Nexium*, which provides healing and symptom relief in more patients and in a shorter time. Further information about our Gastrointestinal therapies can be found on page 53.

Although there are other statins on the market, our version, *Crestor*, is increasingly recognised as being particularly valuable for high-risk patients because of its powerful effect in lowering low-density lipids ('bad cholesterol') and raising high-density lipids ('good cholesterol'). *Crestor* was recently approved in the US as an adjunct to diet for slowing the progression of atherosclerosis in patients with elevated cholesterol and is the only statin with a broad atherosclerosis indication in the US. Further information about our Cardiovascular therapies can be found on page 50.

Our acquisition of MedImmune, Inc. in 2007 brought some significant biopharmaceutical products into our portfolio. *Synagis* is the standard of care for respiratory syncytial virus (RSV) prevention and has helped to protect over one million babies around the world from serious RSV disease. *FluMist*, the first intranasal influenza vaccine to be approved in the US, represents the first innovation in flu vaccination in more than 60 years.

Our portfolio of marketed medicines is highly competitive and includes 11 products with sales of over \$1 billion each. Growth in the

short to medium term is being driven by five key products, *Arimidex*, *Crestor*, *Nexium*, *Seroquel* and *Symbicort*, all launched over the last 12 years. Backed by our successful mature brands such as *Pulmicort*, *Zoladex*, *Seloken/Toprol-XL*, *Atacand* and *Merrem*, these five key products provide the platform for our continued success whilst we enhance our pipeline for the future by improving internal innovation and productivity and accessing external innovation potential.

Details of our major products are shown in the therapy area sections starting on page 50.

Ensuring patient safety

Ideally, a medicine would target only the disease that it is intended to treat and would not have any other unintended effects. In reality, however, despite the best efforts of scientists, such a medicine does not yet exist and all medicines have possible side effects that some patients might experience. Healthcare professionals, in consultation with their patients, must weigh the benefits of a medicine against its possible side effects and decide the acceptable level of risk.

The safety of the patients who take our medicines is a fundamental consideration throughout all of our activities. We aim to minimise the risks and maximise the benefits of each of our medicines, throughout their discovery, development and beyond. After launch, we actively monitor the use of all our medicines to ensure that we become aware of any side effects not identified during the development process. Clinical trials, although extensive, cannot replicate the complete range of patient circumstances that exist among much larger and more diverse patient populations. Rare side effects can often only be identified after a medicine has been launched and used in far greater numbers of patients and over longer periods of time. We have comprehensive and rigorous systems in place for detecting and rapidly evaluating such effects, including mechanisms for highlighting those that require immediate attention. We also strive to identify whether particular types of patients may be more susceptible to the risks associated with a particular treatment, and what the early indicators of this might be, so that side effects can be avoided or minimised in these patients.

OUR RESOURCES, SKILLS AND CAPABILITIES CONTINUED

We have an experienced, in-house team of over 500 clinical drug safety professionals working around the world and dedicated to the task of ensuring that we meet our commitment to drug safety. Each of our products (whether in development or on the market) has an assigned global drug safety physician who, supported by a team of drug safety scientists, is responsible for that product's continuous safety surveillance. Drug safety managers in each of our national companies have local responsibility for product safety within their respective countries.

Our Chief Medical Officer (CMO) has overall accountability for the benefit/risk profiles of the products we have in development and those on the market. The CMO provides medical oversight and ensures that appropriate risk assessment processes are in place to enable informed decisions to be made about safety as quickly as possible. His responsibilities include chairing a group of internal experts from both our Discovery and Development organisations, who critically evaluate our candidate drugs prior to first-time-in-man studies.

Our commitment to patient safety includes ensuring the security of our medicines throughout their manufacturing and supply. We continuously monitor our business environment to identify any new or emerging product security risks and work to ensure that these are managed quickly and effectively. In addition to our internal processes, we also work with regulatory authorities, government agencies, trade associations and law enforcement agencies to combat the growing threat of counterfeiting. Further details of the ways in which we manage the risk of counterfeiting can be found on page 196.

How we price our medicines

Despite significant advances in healthcare in recent decades, the fight against diseases and disorders is far from over. Many are still under-diagnosed or not well treated, or there is not yet an effective therapy. Continued innovation is required to address the unmet medical needs of a rapidly changing world. At the same time, the growing demand for healthcare, driven by people living longer, increasing populations and the emergence of new economies, means more and more pressure on the budgets of those who pay for it.

At AstraZeneca, our challenge is to balance the associated downward pressure on the price of medicines with the cost of the continued innovation that brings benefit for patients and society.

When setting the price of a medicine, we take into consideration its full value to patients, to those who pay for healthcare and to society in general. Our pricing also takes account of the fact that, as a publicly owned company, we have a duty to ensure that we continue to deliver an appropriate return on investment for our shareholders. We balance many different factors, including ensuring appropriate patient access, in our global pricing policy, which provides the framework for optimising the profitability of our products in a sustainable way.

We continually review our range of medicines (both those on the market and in the pipeline) to identify any that may be regarded as particularly critical to meeting healthcare needs – either because they treat diseases that are (or are becoming) prevalent in developing countries, or because they are potentially a leading or unique therapy addressing an unmet need and offering significant patient benefit in treating a serious or life-threatening condition. In such cases, we aim to provide patient access to these medicines through expanded patient access programmes. We also support the concept of differential pricing in this context, provided that safeguards are in place to ensure that differentially priced products are not diverted from patients who need them, to be sold and used in more affluent markets.

Bringing economic as well as therapeutic benefit

In our discussions with those who pay for healthcare, and others, we include an explanation of the economic benefits as well as the therapeutic benefits of our medicines, to ensure their full value is understood.

Effective treatments can help to save healthcare costs by reducing the need for more expensive care, such as hospital stays or surgery. For example, a 2002 study in the US found that for each additional \$1 spent on newer medicines, over \$6 could be saved on total healthcare expenditure (including a saving of \$4 in hospital costs)¹. Another US

study, published in the 'The Journal of Clinical Psychiatry' in the US in 2003, showed that the cost of treating a sufferer of depression fell throughout the 1990s, largely because of a change in the quality of medicines available, which allowed patients to be treated in the community rather than in hospital. The study found that per-patient spending on depression fell by 19% over the course of the decade.

There are productivity benefits too. The use of innovative medicines and vaccines that reduce or prevent the incidence of disease, enables better disease management, which means less time off work or away from school or other daily activities, helping patients to lead normal, productive lives as active members of their communities.

In the developing world

AstraZeneca remains committed to making a contribution to improving health in the developing world. The medicines in our range today are not relevant to the treatment of HIV, TB and malaria, the most significant healthcare problems that the developing world is currently facing, but we are applying our skills and resources to helping in other ways. Our approach is two-fold. We have a dedicated research facility in Bangalore, India that is focused on finding a new, improved treatment for TB (further information can be found on page 67). Alongside this ongoing research, we also form partnerships with non-governmental organisations and other organisations working to strengthen local healthcare capabilities in communities where the lack of effective healthcare systems (including the lack of healthcare professionals), means that the availability of medicines is not always the primary challenge (further information about our healthcare partnerships in the developing world can be found on page 73).

¹ Source: Frank R Lichtenberg, 'Benefits and Costs of Newer Drugs: An update' National Bureau of Economic Research, Cambridge, MA June 2002.