Pharma Facts 2015
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This is the new edition of Pharma Facts (Farmafeiten), an overview of information about pharmaceutical care in the Netherlands and the role in this of innovative medicines. A number of improvements have been implemented since the last edition: new information, shorter texts and clearer illustrations. Based on reader reactions, it has been decided to bring out a printed edition this year too, although all the illustrations can also be found online in the Feitenzaal of our virtual Farmahuis (www.farmahuis.nl). It is possible to download these, so you can use the illustrations for your own presentations, printed material or website. If during the course of the year new information becomes available, this will be included there immediately.

This printed edition of Pharma Facts is also available in Dutch. Do you have suggestions for further improvements or any observations or remarks? Then do please let us know (info@nefarma.nl). We would be glad to benefit from them.
Thanks to research and the innovations coming out of it, we possess many new medicines and treatment methods.
**MORE NEW MEDICINES**

During the last 20 years, more new medicines have come into existence than previously. The average increased from 20 to 27 registrations of drugs with a new active constituent.

**INNOVATION IS PROCEEDING**

Worldwide, biopharma companies have over 5400 new medical products in development, including many new drugs for rare diseases. Every year, an average of 140 such products are added to these.

- **1st phase clinical research**: 2164
- **2nd phase clinical research**: 2329
- **3rd phase clinical research**: 833

Source: PhRMA, Analysis Group, 2013

Source: DiMasi, Tufts Centre for the study of drug development, FDA
PREVENTION, TREATMENT & CURE

Complete cures are sometimes possible using medicines. Patients also remain alive more frequently with an acceptable quality of life without feeling ill. In many areas a lot has already been achieved, but it is still important to maintain full progress on innovation of medicines.

The status of drug development for several diseases.

Source: Nefarma, 2015
**TREND: MORE BIOLOGICAL MEDICINES**

Millions of patients currently profit from biological medicines that are based on human or animal proteins, which are manufactured in micro-organisms. In recent years it has become obvious that the number of biological medicines is becoming an increasingly larger proportion of the total.

**NUMBER OF BIOLOGICAL MEDICINES UNDER DEVELOPMENT BY DISEASE**

- **Cancer**: 338
- **Blood diseases**: 43
- **Diabetes related disorders**: 29
- **Digestive disorders**: 28
- **Eye disorders**: 26
- **Genetic disorders**: 34
- **Autoimmune diseases**: 30
- **Cardiovascular diseases**: 58
- **Musculoskeletal disorders**: 39
- **Infectious diseases**: 38
- **Neurological disorders**: 30
- **Respiratory disorders**: 28
- **Skin disorders**: 22
- **Transplantations**: 176
- **Other diseases**: 58

Source: PhRMA, 2013

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**INNOVATION**

**INCREASE IN TURNOVER OF BIOLOGICAL MEDICINES**

The turnover figures from recent years show clearly that the number of biotech products is gaining an ever-larger proportion of the total number of medicines arriving on the Dutch market.

**GROWTH OF TURNOVER FOR BIOTECH AND NON-BIO-TECH MEDICINES, IN BILLION €**

Source: Axon Pharius, 2013
MEDICINES EXTEND OUR LIVES

Through their continuous search for new medicines, pharmaceutical companies have made a major contribution to increasing the life expectation of the Dutch population.

The absolute life expectancy in The Netherlands (years)

Source: Statistics Netherlands, 2013
CANCER SURVIVAL RATES ON THE RISE

Although many millions of people worldwide continue to die of cancer, in recent decades, there has been major progress in its treatment. Life-lengthening and life-saving treatments are now entirely possible.

Percentages of five-year survival rates of various cancers.

1989-1993 compared to 2008-2012

INNOVATION

POLIO ALMOST ERADICATED

While at the end of the 80s hundreds of thousands of people worldwide still died of polio, in ten years, that number was minimised. In the 90s the number of polio deaths had stabilised at a total of less than 2000 per year.

The estimated number of deaths from polio, worldwide per year

Source: Nederlandse Kankerregistratie (The Netherlands cancer registration) – www.cijfersoverkanker.nl

Source: Bill & Melinda Gates Foundation, 2011
INNOVATION

DECREASE IN THE NUMBER OF DEATHS FROM AIDS IN THE NETHERLANDS
Through improved medicines, the patients do not become so ill and they remain alive longer. The medicines have in the meantime been improved so that they only need to be taken once a day.

Source: Statistics Netherlands (CBS), 2013

INNOVATION

THE FIGHT AGAINST ALZHEIMER’S
The desired breakthrough against Alzheimer disease is still awaited. The development of 101 hopeful potential medicines had to be stopped between 1998 and 2011. But the researchers keep going! Pharmaceutical companies manufacturers still have, in total, over 70 potential treatments in the pipeline.

Total number of medicines against Alzheimer’s the development of which has been stopped.

Source: PhRMA, 2012
NEAREST MEDICINES PRESCRIBED EVER LESS OFTEN

Dutch doctors are becoming ever more cautious in the prescription of medicines that have just come on to the market. This is discernible in both the sales and in the number of doses of medicines prescribed.

Source: Farminform, 2014
Pharmaceutical companies worldwide spend many billions of euros every year on research into and development of medicines.
PHARMACEUTICAL SECTOR AT NO. 1
Share by sector in total worldwide R&D investments, in percentages of the total.

Pharma & biotechnology, over €91 billion per year

Source: European Committee, EU Industrial R&D Investment Scoreboard, 2013
REINVESTMENT OF REVENUES

The pharmaceutical and biopharmaceutical sector invests a greater proportion of its own turnover in R&D than do other sectors.

Investment of own turnover in R&D worldwide, per sector, in %

Source: Europese Commissie, EU Industrial R&D Investment Scoreboard, 2013
International spending on R&D by the U.S. pharmaceutical industry over the past 30 years

The number of registered medicines with new active ingredients in the US

R&D investment in billion dollars

The growth in the number of registrations of medicines with a new active constituent displays a rising trend. This growth is notable because the development costs are in fact rising.

The average duration in years of the development and patenting period of a medicine.

The average duration of the development and patent period of a drug (years)

Preclinical research

Clinical research

Registration & reimbursement

Remaining patent period

Supplementary Protection Certificate (SPC)

4 YEAR Patent-application

6 YEAR

2 YEAR

8 YEAR

5 YEAR Patent-expiration

Source: DiMasi, Tufts Centre for the study of drug development, FDA, 2010

Source: Nefarma
**RESEARCH AND DEVELOPMENT**

**ORPHAN DRUGS BY INDICATION AREA**

In total, 93 orphan drugs for various rare conditions have appeared on the European market in recent years.

**MEDICINES IN RESEARCH PHASE**

1,307 medicines in the test phase have obtained a ‘designation as orphan drug’ since 2000 in Europe. To date around 10 per cent of these have appeared on the market. Many hundreds of potential orphan drugs are therefore still in the pipeline or have fallen by the wayside in the process.

Source: European Medicines Agency, 2014
### RESEARCH AND DEVELOPMENT

#### MOST RESEARCH FUNDS FOR CLINICAL TEST PHASE

The largest part of the expenditure in the development of a new medicine goes to the last phase of the clinical research.

Distribution of investments over the different phases of medicine research.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
<th>Investment Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-clinical research</td>
<td>Investigating the effect of new, possibly active substances in the laboratory</td>
<td>21.5%</td>
</tr>
<tr>
<td>FASE 1</td>
<td>Investigating how the new medicine is tolerated by the body in a limited number of healthy volunteers</td>
<td>8.7%</td>
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<tr>
<td>FASE 2</td>
<td>Determining dose, safety and effectiveness in patients with the condition concerned</td>
<td>12.5%</td>
</tr>
<tr>
<td>FASE 3</td>
<td>Gaining deeper insight into the effectiveness, advantages and possible side effects with hundreds to thousands of test subjects who have the condition concerned</td>
<td>37.5%</td>
</tr>
<tr>
<td>FASE 4</td>
<td>Gaining marketing authorisation based on research files submitted</td>
<td>8.3%</td>
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<tr>
<td>Other</td>
<td></td>
<td>9.8%</td>
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<tr>
<td></td>
<td>Monitoring side effects and effects in the longer term with users</td>
<td>3.5%</td>
</tr>
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</table>

Source: PhRMA & CCMO, 2013, Nefarma, 2014
Rising costs are a current theme in the healthcare debate; it is also important to look at revenues.
RISING HEALTHCARE COSTS
Healthcare costs are rising: the bill is higher every year and it is absorbing an ever greater amount of the Gross Domestic Product.

Total healthcare expenditure in The Netherlands 2003-2013

- €42.9 billion
- €72.1 billion

9% of the total GDP in The Netherlands went to healthcare in 2003.

12% of the total GDP in The Netherlands went to healthcare in 2013.


THE NETHERLANDS IN EUROPE
Compared with other countries, the Netherlands spends relatively little on pharmaceutical care.

Proportion of expenditure on pharmaceutical care in total care budget by country in 2012.

% 17.5% 17.5% 15.0% 14.2% 14.2% 13.1% 12.9% 11.4% 9.4% 9.3% 8.4% 8.4% 7.5% 4.9%

PRT FRA IRL DEU ESP FIN ITA BEL AUT CHE SWE NED GBR DNK

Annual spending on medicines per capital

- €361 SWE
- €522 NED
- €291 ESP
- €291 ITA
- €242 DNK
- €239 PRT
- €224 GBR

Source: Foundation for Pharmaceutical Statistics (SFK), 2014
HEALTHCARE COSTS COMPARED

How heavily do the care costs weigh on the budgets in each country? For this, we look at the Gross Domestic Product (GDP) insofar as these are known to the OECD.

Total healthcare spending per country as % GDP

(*Data from 2011, as 2012 is not yet available)

Source: OECD, 2013
The total annual turnover for prescription drugs has fallen slightly in recent years. The turnover for medicines in hospitals is rising. This may partly be explained by the transfer (since 2012) of certain groups of medicine to the hospital budgets.

TOTAL TURNOVER ON MEDICINES

The total annual turnover for prescription drugs has fallen slightly in recent years. The turnover for medicines in hospitals is rising. This may partly be explained by the transfer (since 2012) of certain groups of medicine to the hospital budgets.

COSTS AND REVENUES

MEDICINES WITHIN HEALTHCARE

Only a limited part of the total healthcare expenditure in the Netherlands may be attributed to medicine costs.

7% of all public health expenditure (71.3 billion euros) in 2015 is going to extramural medicines.

COSTS AND REVENUES

TURNOVER ON MEDICINES

The total annual turnover for prescription drugs has fallen slightly in recent years. The turnover for medicines in hospitals is rising. This may partly be explained by the transfer (since 2012) of certain groups of medicine to the hospital budgets.

Total turnover on medicines in billions of euros*

* Amounts are based on pharmacy purchase prices. The actual market price is the result of negotiations between the parties in the field.
Source: Farminform, 2015

Source: Dutch National Budget VWS for 2014, Dutch Budget day (Prinsjesdag), 2014
**AGAINST THE TREND: PRICES OF MEDICINES FALL**

The average price of medicines has fallen sharply in recent years. Various reasons lie behind this fall, which started halfway through the nineties.

### Consumer price index compared to the price index for prescription medicines (1996 = 100)

<table>
<thead>
<tr>
<th>Category</th>
<th>1997</th>
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<th>2001</th>
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<th>2007</th>
<th>2009</th>
<th>2011</th>
<th>2013</th>
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<tr>
<td>Housing, Water &amp; Energy</td>
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<td>Transportation</td>
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<td>Total Expenditure</td>
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<td>Prescription drugs</td>
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Various measures and agreements have contributed to the decrease in the price of medicines.
VOLUME AND TURNOVER

The total use of prescription drugs in the Netherlands is increasing every year, partly due to the ageing population. Despite this volume growth, manufacturers’ total earnings are falling. Manufacturers of branded or trademarked drugs have experienced a decrease in both their turnover and volume in recent years. For generic drugs, the volume is growing, but the turnover remains more or less stable.

Source: Farminform, 2015

VOLUME GROWING ...

... TURNOVER FALLING

* Amounts are based on pharmacy purchase prices. The actual market price is the result of negotiations between the parties in the field.
In the Netherlands, approx. 14,000 people every year die from a rare disease. This corresponds to approx. 10\% of all mortality caused by illness.

Source: PhRMA, 2011

According to predictions, our life expectancy will continue to increase in the coming decades: by 2040 men will reach an average age of 88 years and women an average age of 90 years.


Every euro invested in healthcare yields return 1.30 euro return

Source: Marc Pomp, Een beter Nederland, De Gouden Eieren van de gezondheidszorg, 2010 (Two reports for VWS)