

LUNDBECK MAGAZINE

2016/2017

THEY'RE ONLY THOUGHTS

Schizophrenia

Page 10

A RUPTURED MUSCLE IN THE BRAIN

Depression

Page 20

LIFE GOES BY IN A GLANCE

Parkinson's disease

Page 32

THINKING OF ANOTHER HUMAN AS A BURDEN

Alzheimer's disease

Page 40

CONTENTS

04

PROGRESS FOR PATIENTS

In this issue of the Lundbeck Magazine, we present to you four brave patients: Maria, He Wei, Eleanor and Randi, each telling us their personal story about what it's like to live with a psychiatric or neurological disorder.

06

PROGRESS IN MIND

All over the world, psychiatric and neurological disorders are a growing burden, not only for individuals but for families and societies as well.

18

DISEASE AREAS: PSYCHIATRY

Schizophrenia and depression

10

THEY'RE ONLY THOUGHTS

Lost in a psychotic episode, Maria Liv Kjærgaard is consumed by fear. But there's more to her than fear. The real Maria's in there too – and she yearns to come out.



20

A RUPTURED MUSCLE IN THE BRAIN

How can we take better care – of not just ourselves, but each other? That's a question that has absorbed Randi Bitsch since her own depression.



32

LIFE GOES BY IN A GLANCE

At 57, He Wei's thoughts often revolve around the future. But he tries not to dwell on it.

26

FROM IDEA TO PATIENT

28

STORIES FROM OUR ORGANIZATION

38

DISEASE AREAS: NEUROLOGY

Parkinson's disease and Alzheimer's disease

46

OUR HISTORY: NARROWING FOCUS, BROADENING SCOPE

50

WE ARE LUNDBECK

40

THINKING OF ANOTHER HUMAN AS A BURDEN

Patricia Ekstrom has moved back home to take care of her mother. Eleanor has mild to moderate Alzheimer's, and there's a good reason why Patricia understands the job that lies ahead.



Visit the Lundbeck website
www.lundbeck.com

Editor in chief: Lundbeck

Journalist: Mette Thorsen and
Anna Mølgaard Hansen

Photography: Jens Honoré

The patients have not received
any remuneration from Lundbeck.

Design: Make®

Print: Strandbygaard Grafisk

February 2016

Lundbeck is one of the only pharmaceutical companies in the world entirely focused on depression, schizophrenia, Parkinson's disease and Alzheimer's disease, and we have developed and marketed leading medicines for these diseases during the past century. Over the years, millions of people have been treated with our products.

PROGRESS FOR PATIENTS

More than 700 million people live with psychiatric or neurological disorders and less than half are treated. In order to create successful treatments, understanding the underlying mechanisms of the disease are crucial and precede any development phase in our research and development (R&D) efforts. Understanding patients' need and individual disease progression represents the most important driving force behind Lundbeck's neuroscience research and enables us to develop tomorrow's drugs.

At Lundbeck, we encourage increased support for affected families and we engage in communities to create broader social acceptance of patients. To raise awareness and prevent stigmatization, we share our knowledge and expertise. Our global presence enables us to let successful, local initiatives travel the world and make a difference to patients globally.

In this issue of the Lundbeck Magazine, we present to you four brave patients: Maria, He Wei, Eleanor and Randi, each telling us their personal story about what it's like to live with a psychiatric or neurological disorder.

Maria from Denmark is 23 years old and suffers from paranoid schizophrenia, OCD and borderline personality disorder.

He Wei from China is 57 years old and lives with Parkinson's disease.

Eleanor from the US is 85 years old and lives with Alzheimer's disease.

Randi from Denmark is 56 years old and has recovered from depression.

I would like to personally thank all four as well as the caregivers who participated in this year's edition of the Lundbeck Magazine. It is through their stories that we as a company get wiser and learn to understand our patients and their needs.

For these people to step forward and tell their story is a major contribution to the awareness and advocacy needed to place psychiatric and neurological disorders on the international health agenda, ultimately paving the way for better conditions for patients around the world.



Kåre Schultz
President & CEO



All over the world, psychiatric and neurological disorders are a growing burden, not only for individuals but for families and societies as well.

PROGRESS IN MIND

AT THE FOREFRONT OF RESEARCH

An estimated 700 million people worldwide are living with a psychiatric or neurological disorder and far too many suffer due to inadequate treatment, discrimination, a reduced number of working days, early retirement and other unnecessary consequences.

Lundbeck is a specialized pharmaceutical company focused on depression, schizophrenia, Parkinson's disease and Alzheimer's disease. For more than 70 years, we have been at the forefront of research within neuroscience and our development and distribution of pioneering treatments continues to make a difference to patients worldwide.

We are recognized for having helped hundreds of millions of people living with psychiatric and neurological disorders. However, there is still a massive need for further help.

Every day, we strive for improved treatment and a better life for people living with psychiatric and neurological disorders – we call this Progress in Mind.

MEETING UNMET NEEDS OF PATIENTS

The best way to help patients is to always have their needs as our first priority. This core understanding drives our commitment to innovation within psychiatry and neurology. It also strengthens our ability to bring research forward, and it means that we will continue our active engagement with patients. Our specialists develop new drugs based on a deep insight into the brain, the specific diseases and the unmet medical needs of patients. In order to create successful treatments, being dedicated to the patient and his or her specific needs is crucial and precedes any development phase in Lundbeck's R&D commitment.

OUR R&D COMMITMENT

Focus on R&D is the most important pillar in Lundbeck's ambition to improve treatment for people living with psychiatric and neurological disorders. We are specialists in our area and have research facilities in

Denmark and China, and around 1,000 employees work in our R&D units. We cooperate closely with strategic partners all over the world, ensuring the best possible foundation for innovation and the development of new treatment solutions. Together with our partners, we make our drugs available across continents for the benefit of millions of patients.

We research, develop and market treatments for a number of psychiatric and neurological disorders.

Psychiatry

- Depression
- Schizophrenia

Neurology

- Parkinson's disease
- Alzheimer's disease

OUR INVOLVEMENT

Global progress for people living with psychiatric and neurological disorders requires a multifaceted approach.

First and foremost, we continue to develop new and improved medical treatments and continue to focus on the patient, ensuring that he or she regains possibilities. But we also work to embrace our vision from two other essential dimensions: We encourage increased support for affected families, and we engage in communities to create broader social acceptance of patients.

To raise awareness and prevent stigmatization, we use our voice as specialists in psychiatry and neurology and share our knowledge about the many unmet needs in the treatment of psychiatric and neurological disorders. We reach into both professional and patient communities to offer disease education and support programmes to healthcare professionals, patients and their families.

Our global presence enables us to let successful, local initiatives travel the world and make a difference to patients everywhere.

IT'S ALL ABOUT THE PATIENT

**PROFESSOR ROGER MCINTYRE,
UNIVERSITY OF TORONTO, CANADA**

*Involving patients in setting the goals of treatment is an essential part of managing any chronic condition. I welcome the shift towards placing patients at the centre of the care plan, involving them in the setting of goals and in deciding how progress is to be assessed. It is incumbent on us to ask what aspects they are satisfied with and what aspects still need to be improved. Collaboration in the selection of care is also helpful in managing side effects.**

• Source
<http://oncns.com/content/treating-depression-what-do-and-when-do-it>

**PROFESSOR PETER FALKAI,
LUDWIG-MAXIMILIANS UNIVERSITY
MUNICH, GERMANY**

*One of the most challenging things I teach to young doctors is 'talk to your patient'. This is a simple but time-consuming intervention that gives us a great deal of information. So ask the patient to describe a typical day for you, or when did they last meet a person outside their home, or when did they last read a newspaper, and what did it say? We don't typically ask patients these sorts of questions, but they give us a great gauge on their quality of life and ability to function.**

• Source
<http://oncns.com/content/interview-professor-peter-falkai-ludwig-maximilians-university-munich-germany>

**DR VIRGINIA SORIA,
BARCELONA, SPAIN**

*Dr Soria believes in the use of a more holistic approach to the management of depression, as it has been reliably demonstrated that psychopharmacology and psychotherapy in combination are more effective in gaining symptom remission than either therapy used alone. Ideally, combination therapy should be used from the outset of treatment. This also includes offering advice on lifestyle management including diet and exercise. "It can often take longer to persuade a patient to exercise than to take their medicine," she says.**

• Source
<http://oncns.com/content/interview-dr-virginia-soria-barcelona>

BERT JOHNSON, PRESIDENT OF EUFAMI (THE EUROPEAN FEDERATION OF ASSOCIATIONS OF FAMILIES OF PEOPLE WITH MENTAL ILLNESS)

*When a young adult develops schizophrenia, it is entirely different from dealing with the usual problems that affects this age group. And it is entirely different from caring for someone with a physical disease. Mental illness is still seen as threatening and mysterious, with no visible cause. There is fear of aggression and violence. Even family doctors are not comfortable with serious mental illness. So the needs of carers deserve understanding. Carers also deserve wider recognition, respect and support for what they do.**

• Source
<http://oncns.com/content/family-carers-deserve-recognition-and-respect>

MEDICAL

At Lundbeck, we are recognized as specialists in neuroscience research and have developed innovative treatments for more than 70 years. Find here two examples of how we otherwise engage with stakeholders to improve medical treatment.

The Brain Prize

The Brain Prize is annually awarded to one or more scientists who have distinguished themselves by an outstanding contribution to European neuroscience and who are still active in research. Founded by the Lundbeck Foundation, the majority shareholder of H. Lundbeck A/S, The Brain Prize recognizes highly original and influential advances in any area of neuroscience, including fundamental research on molecular, cellular, physiological and pharmacological mechanisms, studies of behaviour and cognition, advances in technology for monitoring the nervous system, and clinical research on the causes, treatment and prevention of psychiatric and neurological disorders.

More information:

<http://www.thebrainprize.org>
<http://www.lundbeckfoundation.com>

The Lundbeck Institute

The Lundbeck Institute was founded in 1997 as a unique educational initiative by Lundbeck. Today, the Lundbeck Institute is a strong and established brand with an outstanding reputation among scientific experts and clinicians in psychiatry and neurology from all over the world. One of the most important future directions of the Lundbeck Institute is to increase activities in developing regions like Asia, where educational need is maximal and available resources are still scarce. With its initiatives, the Lundbeck Institute leverages Lundbeck's strong heritage in psychiatry and neurology to provide high quality disease education and resources and to help ensure that Lundbeck is recognized as a credible partner in our focus disease areas.

More information:

<https://www.cnsforum.com>



IMPROVED MEDICAL TREATMENT

- Scientific cooperation and partnerships
- Funding independent research
- Scientific education

COMMUNITY

Disease awareness in society is important to break down stigma and to improve conditions for patients. Find here an example of what we do to help increase broader acceptance of patients.

Depression in the workplace

Depression is experienced by a large proportion of the workforce and associated with high costs to employers and employees. There is however little research on how the social costs of depression vary by social and cultural context. The Impact of Depression at Work Audit (the IDeA Survey) investigates individual, workplace and societal factors associated with greater perceived discomfort regarding depression in the workplace, greater likelihood of employees

taking time off work as a result of depression, and greater likelihood of disclosure of depression to one's employer. The study covers 15 countries and highlights the importance of individual, workplace and societal factors that may be associated with how people with depression are perceived and treated in the workplace, and, hence, factors that may be associated with openness and disclosure among employees with depression.



BROADER ACCEPTANCE OF PATIENTS

- Disease awareness campaigns and films
- Access to health activities and donations
- Community partnerships





HELP PATIENTS REGAIN POSSIBILITIES

- Patient support programmes
- Patient safety information
- Social media interaction

PATIENT

Improving the lives of patients is what we work for everyday at Lundbeck. Find here some examples of what we do to help patients regain possibilities.

Good morning Parkinson's

The Good Morning Parkinson's project aims to increase awareness of morning symptoms in Parkinson's disease. The project is two-faceted, firstly providing education, support and helpful content to patients and their relatives to help raise awareness around the disease and morning symptoms. Secondly, the project provides tools to help healthcare professionals (HCPs) better communicate with their Parkinson's patients to maximize treatment outcome. The project was initiated with a qualitative and quantitative patient survey, to capture more insight into the burden of morning symptoms and gain data to be used in the campaign. The initiative is currently focused on patients in China and South Korea but is expected to expand to other Asian countries in the years to come.

Alzheimer's disease in China

In connection with the 2015 annual Alzheimer's disease day and month in China, Lundbeck supported a local event in cooperation with Peking University Sixth Hospital and Peking University. In order to provide the necessary awareness and support to those affected by Alzheimer's disease, the event involved more than 200 patients and caregivers as well as experts and key opinion leaders (KOLs). They discussed disease management and public awareness – a relevant topic as China, with more than 9 million Alzheimer's sufferers, represents the world's largest group of patients with the disease.* Following the event, a series of activities was initiated, inviting patients and their relatives to consultations and examinations at the Peking University Sixth Hospital – free of charge.

• Source:

<http://www.bloomberg.com/bw/articles/2014-02-06/chinas-alzheimers-patients-overwhelm-ill-prepared-health-system>



MORE HELP FOR AFFECTED FAMILIES

- Family support programmes
- Educational films and events
- Fundraising and donations

FAMILY

Carers play a crucial role in the management of people suffering from psychiatric and neurological disorders. Find here an example of what we do to provide more help for affected families.

Caring for carers

When taking an active role in the treatment process, carers can encourage the patient with treatment plans, including pharmacological treatments as well as identifying and responding to early signs of relapse. In collaboration with the European Federation of Associations of Families of People with Mental Illness (EUFAMI) and the University of Leuven, the Caring for Carers (C4C) survey was initiated to assess the experiences of family caregivers in caring for their relatives suffering from schizophrenia.

The survey explores the unmet need for education and empowerment of carers. Building on the evidence of the C4C survey and in partnership with King's College London and an International Steering Committee, the Carer Academy is now launched along with one of the first online e-learning courses, free of charge, devoted to upskill carers to take on a more prominent role in supporting and taking care of their loved ones.



THEY'RE ONLY THOUGHTS

Lost in a psychotic episode, Maria Liv Kjærgaard is consumed by fear. But there's more to her than fear. The real Maria's in there too – and she yearns to come out.



Inside Maria's head, a certain scene replayed itself in an endless loop. An evil man would leap upon her and slash her throat. 'They're only thoughts', Maria repeated to herself each day.

A 4-year-old girl goes for a walk at the marina with her dad. They've just had some ice cream, and now they turn towards the water. The girl gets permission to walk along the edge of the wooden pier. On her one side, her father in his summer shorts; on the other, deep water. Now and then he lets go of her hand, to make her find her balance. Then he grabs hold again. The girl's parents are divorced; she has looked forward to spending time with him, and he is laughing.

But his other hand grasps a beer, and the reason he's laughing is that he's drunk. His attention shifts to the passers-by, whom he greets in high spirits. The girl wants to hold his hand the entire time. The sun is shining. She wants to get away from the edge.

Instead, Maria – for that is her name – fixes her gaze in front of her and focuses: she must not stumble.

WOULD THEY KNOW?

Long before Maria was diagnosed with paranoid schizophrenia, the world flooded her senses with information. It tended to blur into a single message: *Danger – beware!*

As a teenager, Maria kept a watchful eye on everything around her. She'd observe the tidy homes her classmates lived in; how they all had rooms of their own. Their dresser

drawers were full of clothes that fit, and when they sat down to dinner, everyone spoke freely. Thoughts raced in Maria's head when she visited. Her clothes were scruffy and too small. Would they notice? If a grownup became aware of her and asked her something, would she know the right answer? Maria cowered. When spoken to, she replied in monosyllables, and she lied if anyone asked what her mother did.

Maria knew a great deal about the lives of ordinary people. Yet they knew almost nothing of hers – and that was how she wanted it. The door to Maria's world was shut,

and she was on constant guard to make sure it didn't slide open.

For Maria's ears had heard words that her girlfriends never had. They must have sat on couches next to their mothers, but none of them had sat on one and heard her mother say, "Your dad. He's dead," and learned he was dead because he'd hanged himself. Maria does not remember reacting to the news. She'd been 12 that afternoon on the couch, and afterwards her mother, Mette, plunged into mental darkness; she lost her job, lost her acquaintances, fell deeper and deeper – but she still had Maria, and Maria tried to pull





“

Maria knew a great deal about the lives of ordinary people. Yet they knew almost nothing of hers – and that was how she wanted it.”



her back up. When Maria came home from school, her mother would be sitting in the corner of the couch, exactly where Maria had left her, her vest stained with cigarette ash and food. Sometimes Maria would resolve to give her a bath. But Mette was so heavy and listless, that every step of that task was difficult for Maria to manage.

“I wish someone had intervened before,” Maria’s mother says today. “I was very sick and unable to look after Maria. But I just couldn’t see it.” Days turned to months, and when at last Mette entered a psychiatric ward, a year and a half had vanished.



THE FANTASIES FLARED UP

Inside Maria's head, there floats a memory from when she was 16 and spent a year living at a continuation school. She'd made a friend there, and both of them found boyfriends. Four best friends. One day they chased each other with water pistols and got soaked, squealing and sliding around in soapy water and pushing each other under the showers to get each other even wetter. It took days to clean everything up. That water fight stands out in Maria's mind; a time when her head still was clear. There was only joy, she remembers. And the memory of that joy continues to gleam.

Back home again, she entered secondary school. Everything went well. Then it alternated between going all right and going badly. Then it got worse and worse. She began to imagine vile things, and the fantasies flared up; she had to fight them so they wouldn't become reality. In the end, it was Maria who huddled in a corner of the couch, shaking, and after four years, Maria who entered a psychiatric ward.

She had felt so alone. At the hospital there were others like her, and people who understood. Maria recalls a day when she was sitting in the courtyard, trying to distract her obsessive thoughts by rocking back and forth. A nurse was seated beside her. Maria longed to confide in her, and the nurse remained sitting there. Then the thoughts poured out. Maria was terrified of turning into someone who tortured animals. Into a murderer. Into a pyromaniac who set fire to houses and took

pleasure in seeing the flames consume everything. She was scared she was transforming into something inhuman. "Maria?" said the nurse. Maria could feel her stroking her cheek. "They're only thoughts."

Maria was diagnosed. She began taking medicine and was discharged to a group home for young adults with mental illness. It would turn out all right.

But when the terrors come, she says, it's like a fire burning her skin. And the terrors came often. When she resumed her studies, her curling iron wanted to burn the house down. When she bought cigarettes, the petrol station threatened to explode. An evil man lurked in the laundry room of the group home. Maria hid in her room and drew the blinds, and at night she peed in a cup so she wouldn't have to leave.

Once again, she was admitted to the hospital.

SHE CALLED HIM UNCLE JAN

A psychiatric ward is a miniature society, home to a wide variety of people. As Maria describes it, the ward's a place that is both safe and unsafe. During her second stay there, she met a CEO who'd been fired and lost everything, a prostitute who abused drugs and suffered from PTSD, and a little woman in her sixties who eyed her with malice, because she was sure Maria had stolen her husband. She also met a young girl with the same diagnosis she had, and a male alcoholic by the name of Jan.

The disease is marked by positive symptoms

hallucinations and **delusions**



and negative symptoms

depression,
blunted
emotions and
social withdrawal



The chance of an individual developing schizophrenia during his or her lifetime is approximately



It typically starts in **early adulthood,**

but it can develop at any age from late teens onwards.





Inside Maria's head, a certain scene replayed itself in an endless loop. An evil man would leap upon her and slash her throat. *They're only thoughts*, Maria repeated to herself each day, recalling the nurse's words; *only thoughts*. But then one day on the ward, her delusion stepped into the TV room, a delusion of flesh and blood who struck Maria hard in the groin and screeched, "I'll slit your throat!"

Her groin hurt. This was no fantasy.

It wasn't a man who'd hit her. It was the suspicious little woman, and now the staff came running. But would they be there to protect Maria at night? Would the woman sneak into her room and murder her while she slept? Maria lay there, wide awake, and had to have more sleeping pills.

Months passed. The obsessive thoughts persisted, but Maria found more and more room to be herself. The young woman her age was sobbing, and Maria sat down beside her to comfort her. "It'll be all right," she told her, and the young woman calmed down. For hours she would play cards with Jan, who was nothing like the men in her fantasies. She called him Uncle Jan. He was completely convinced there was hope for Maria, and he said so often. "This is all just something that's happening now," he assured her.

The little woman emerged from her psychosis and asked Maria to forgive her. And Maria was released to the group home – and to a special early-intervention treatment for young adults with schizophrenia.

That's where she is now.

“

Maria hid in her room and drew the blinds, and at night she peed in a cup so she wouldn't have to leave.”

HER SENSES REMAIN WIDE OPEN

She's discovered new sources of strength in herself. No more feeling ashamed. She writes opinion pieces and talks on the radio about being mentally ill. And as part of a national anti-stigma campaign, she serves as an ambassador for young people with mental illness. Recently, she received a letter from a girl asking for advice, and it filled her with unaccustomed joy.

Yet her senses remain wide open. A trip down Nørrebro Street and the smell of kebab

and exhaust assaults her, the yellow of a sign glares in her eyes, a bustling and clattering comes at her from all directions. And if someone speaks to her, she hears the soft sound of tongue striking palate.

And then there are the obsessive thoughts. They insist, for instance, that her mother smoke precisely the same way that Maria does, with the same puffing sound. Maria wishes she could talk more about these thoughts, but it's too dangerous. Mette puffs her smoke out just the way Maria needs her to. They are often together; the two of them

do word games, play cards, recite rhymes to distract Maria's thoughts. Every day they text each other good morning and good night.

The purpose of Maria's therapy is to help her maintain her balance. She's resumed her studies once more, and soon she will start prepping for the next exam. People are reaching out to her, and she's reaching out to them.

"Is it possible to become your friend, Maria?"

"Yes, of course! I'm very social."



A psychotic person can seem scary, but try not to be afraid if you can. Even though they can't ask for help, they can certainly accept it. Use calming words, reassuring words. The person will hear you, even if it doesn't seem like it. A hug can help too – a firm but brief hug works best, I think. And finally, you can help them get some professional help.

"You can be someone else's friend – but can they be yours?"

Pause.

"There's always a part of me that's suspicious, I guess." She hesitates. "Most people are probably just friends with the surface Maria."

But she explains that once in a while, the person she calls the real Maria emerges. "I do have people I trust."

"Once in a while, Uncle Jan is right." ●



Maria Liv Kjaergaard

AGE

23

DIAGNOSIS

Diagnosed with paranoid schizophrenia, OCD and borderline personality disorder with self-harm urges in 2014.

RESIDENCE

A group home in Copenhagen for young adults living with mental illness.

EDUCATION

Studying public administration at Metropolitan University College.

VOLUNTEER WORK

Youth ambassador for a national anti-stigma campaign, in which young people with mental illness visit schools and other institutions to talk about their conditions.

FIRST PSYCHIATRIC ADMISSION

August–November 2014

SECOND PSYCHIATRIC ADMISSION

February–August 2015

RELATIVES

Maria's an only child, and her closest relative is her mother, Mette.

MY ADVICE IF YOU ENCOUNTER SOMEONE EXPERIENCING A PSYCHOTIC EPISODE

A psychotic person can seem scary, but try not to be afraid if you can. Even though they can't ask for help, they can certainly accept it. Use calming words, reassuring words. The person will hear you, even if it doesn't seem like it. A hug can help too – a firm but brief hug works best, I think. And finally, you can help them get some professional help.

Mette Kjaergaard, Maria's mother

AGE

51

DIAGNOSIS

Diagnosed with bipolar disorder in 2003.

RESIDENCE

Lives in her own apartment in Copenhagen.

EMPLOYMENT

A former primary school teacher, now receiving a disability pension.

THE MOST ESSENTIAL PART OF MY DAUGHTER – THE PART THAT REMAINS UNCHANGED DESPITE HER ILLNESS

Maria has always had the will and the ability to change the world for the better. Earlier she was active in a political youth organization, and now she's an ambassador for mentally ill young people.

MY HOPES FOR MARIA'S FUTURE

I hope that she finds peace in herself and becomes happy on her own terms. I'm also hoping for grandkids, but I don't know if Maria feels that would be safe.

MY FEARS ABOUT MARIA'S FUTURE

I'm afraid that the world won't get to recognize what a fantastic person she is.

ONE THING PARENTS OF HEALTHY CHILDREN DON'T KNOW ABOUT HAVING A CHILD WITH SCHIZOPHRENIA

You feel so helpless. That helplessness – nothing can console you.

MY ADVICE TO A PARENT IN MY SITUATION

No one can bear such a burden alone, year after year. Try to find a professional to talk with – someone who isn't emotionally invested in your situation. In my case, it's been a huge help to talk with a psychologist from a patient organization.

SCHIZOPHRENIA

The WHO estimates that over

21
million

people suffer from schizophrenia, making it one of the top 20 causes of disability worldwide.



Schizophrenia

is among the most financially costly illnesses in the world.

Schizophrenia affects people regardless of race, culture or social class. It typically starts in early adulthood, from age

20

but it can develop at any age from late teens onwards.

Schizophrenia is a chronic, severe and disabling psychiatric disorder.

The disease is marked by positive symptoms (hallucinations and delusions) and negative symptoms (depression, blunted emotions and social withdrawal) as well as by disorganized thinking. Schizophrenia affects both men and women, although men tend to develop the condition slightly earlier in life. The chance of an individual developing schizophrenia during his or her lifetime is approximately 1%.

The WHO estimates that over 21 million people suffer from schizophrenia, making it one of the top 20 causes of disability worldwide. Schizophrenia is among the most financially costly illnesses in the world and, together with other psychotic illnesses, has been shown to account for a significant proportion of total national healthcare budgets: 1.5% in the UK, 2% in the Netherlands and France, and 2.5% in the US.

Schizophrenia discovered in 1887

The non-specific concept of madness has been around for many thousands of years, but schizophrenia was only classified as a distinct mental disorder by Emil Kraepelin in 1887. He was the first to make a distinction in the psychotic disorders between what he called dementia praecox and manic depression. Kraepelin believed that dementia praecox was primarily a disease of the brain, and particularly a form of dementia. Kraepelin named the disorder 'dementia praecox' (early dementia) to distinguish it from other forms of dementia (such as Alzheimer's disease) which typically occur late in life.

The Swiss psychiatrist, Eugen Bleuler, coined the term, "schizophrenia" in 1911. He was also the first to describe the symptoms as "positive" or "negative". Bleuler changed the name to schizophrenia as it was obvious that Kraepelin's name was misleading, as the illness was not a dementia (it did not always lead to mental deterioration) and could sometimes occur late as well as early in life.

Source:

<http://schizophrenia.com/history.htm>



350 million

people worldwide are estimated to live with depression.

Cognitive symptoms (difficulty concentrating, forgetfulness and/or indecisiveness) appears

94%

of the time during major depressive episodes.

One study found that up to

65%

of individuals suffering from depression rated their condition as being severely disabling.



DEPRESSION

Depression is a serious medical condition that is associated with a series of symptoms including melancholy, loss of energy as well as suicidal thoughts. These symptoms can have a great impact on daily life.

Depression includes a range of symptoms, including cognitive impairment. The cognitive symptoms of depression may go unrecognized by both healthcare providers and patients. Common cognitive complaints include difficulty concentrating, indecisiveness and forgetfulness. These symptoms are common and in many cases they can persist between major depressive episodes. According to a three-year prospective study of people treated for depression, cognitive symptoms (defined as diminished ability to think or concentrate and/or indecisiveness) were reported 94% of the time during major depressive episodes and 44% of the time between major depressive episodes (or during periods of partial remission).

Depression is found worldwide in people of all age groups and from all social backgrounds and among both men and women. Depression typically first appears in people aged 20–25 years. Currently, it is estimated that 350 million people worldwide suffer from depression. The WHO now lists depression as the leading disability worldwide and a major contributor to the overall global burden of disease. One study found that up to 65% of individuals suffering from depression rated their condition as being severely disabling. Despite this, many people with depression remain untreated.

Long-standing existence of depression as a health problem

Depression has always been a health problem for human beings. Historical documents written by healers, philosophers, and writers throughout the ages point to the long-standing existence of depression as a health problem, and the continuous and sometimes ingenious struggles people have made to find effective ways to treat this illness.

Depression was initially called “melancholia”. The earliest accounts of melancholia appeared in ancient Mesopotamian texts in the second millennium B.C. At this time, all mental illnesses were attributed to demonic possession, and sufferers were attended to by priests. In contrast, a separate class of “physicians” treated physical injuries (but not conditions like depression). The first historical understanding of depression was thus that depression was a spiritual (or mental) illness rather than a physical one.

Source:
<https://www.mentalhelp.net/articles/historical-understandings-of-depression/>

A RUPTURED MUSCLE IN THE BRAIN

How can we take better care – of not just ourselves, but each other? That’s a question that has absorbed Randi Bitsch since her own depression.

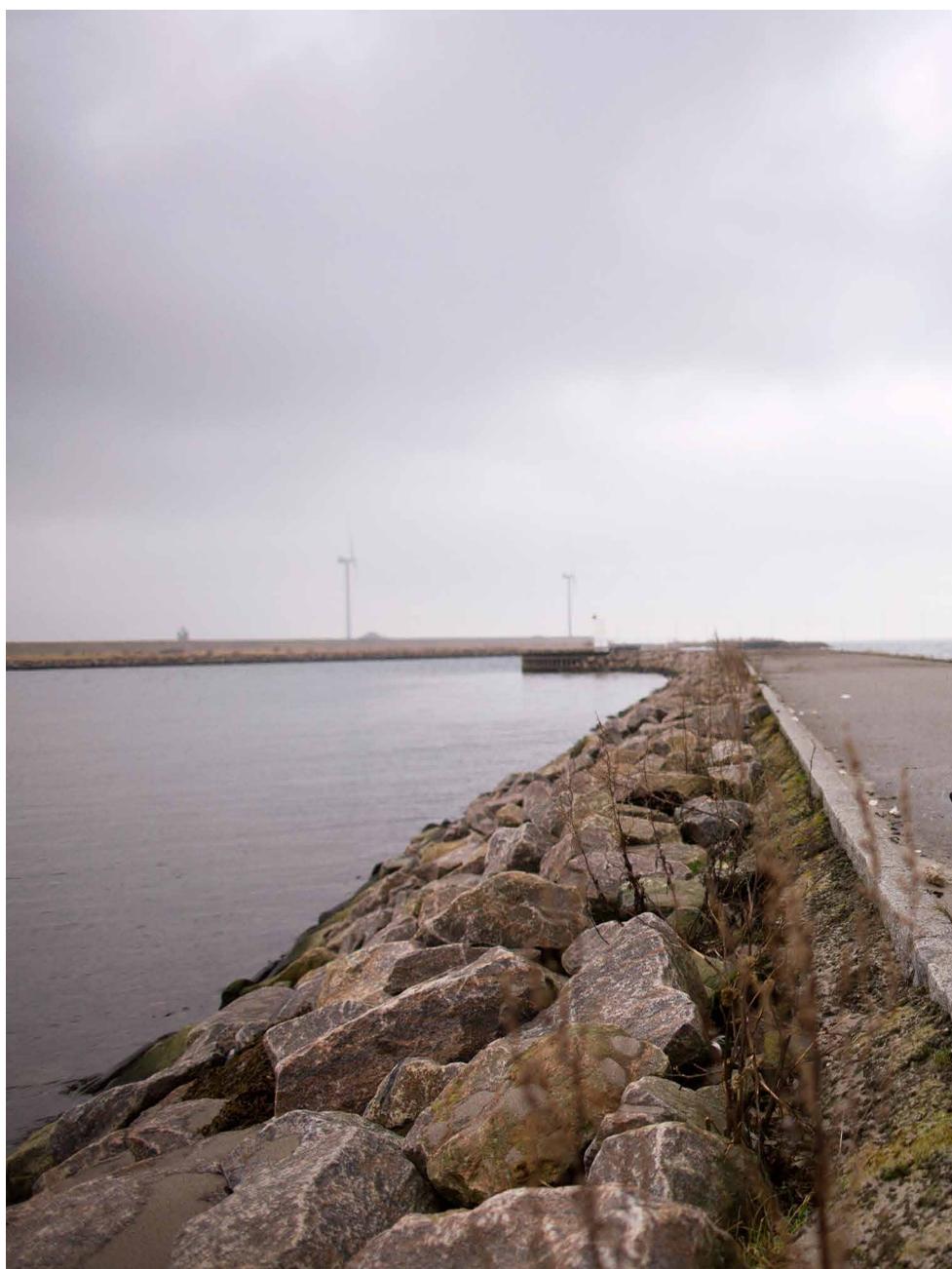


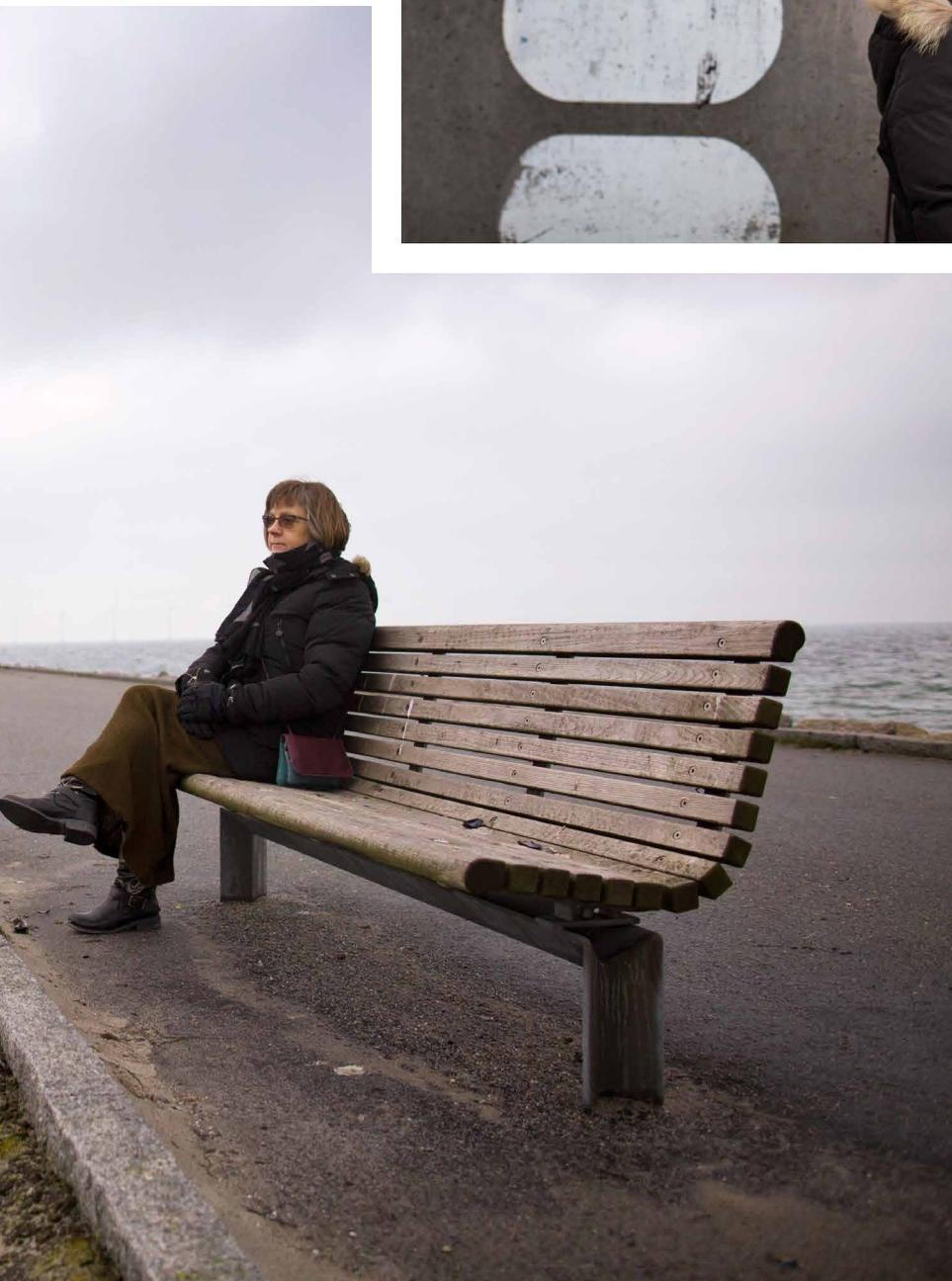
The mornings were the worst. If she got up, she knew she'd have to pick out some clothes to wear, and that decision was so paralyzing that she would remain in bed.

In December 2012, Randi opens a Christmas card from her workplace. She heads up the rehabilitation unit of a mid-size Danish municipality. The unit provides physical and occupational therapy to citizens ranging from disabled children to elderly people with chronic illnesses. In the past year, Randi's overseen numerous organisational changes, and her unit has won high praise for their results. *Thank you*, her boss has written, *thank you for your dedication*.

But all is not Christmas cheer. Her team has lost a key employee to a round of budget cuts, and the unit is scheduled to join forces with a rehab unit from another municipality on a major area of activity. Both changes are designed to save money, and together they mean one thing: a decline in services. Randi has three ways to tackle the problem. The therapists can reduce the time they spend writing up case notes; they can provide patients with less treatment; and they can all push themselves to work even faster.

One therapist refuses to take on extra tasks, so the others have to pull even more weight. Randi can feel the team's frustration – just as she can feel her own doubts about getting everything to function. But she's the one in charge. She can't lose her enthusiasm.





Just before the Christmas holiday, her boss calls her up and says she needs the unit's programme development officer for other assignments. This tells Randi that her boss is under a lot of pressure herself and is struggling to make departmental ends meet. And two realisations slam into her: she hasn't been consulted about this decision, and her unit's progress and innovation will now grind to a halt. The only thing left is day-to-day operations, and there's no way she can work her way out of the professional decline that will ensue. "When I hung up," Randi recalls today, "I could feel the energy drain out of me."

RANDI DIDN'T KNOW HOW IT WOULD END

It was a classic managerial problem and in retrospect, Randi sees the problem as geographic. Unit managers all worked at city hall – except for her. She worked off-site, together with her team. To prevent other decisions from being made over her head, she'd have to insist on being part of the managers' community. Was it possible for her to sit in city hall once a week? The answer was no. And she noticed an ominous development: her boss became harder and harder to get hold of.

Depression typically first appears in people aged

20-25

years



The WHO now lists

depression

as the leading disability worldwide and a major contributor to the overall

global burden of disease.



people have taken time off work for depression.

Meanwhile, Randi kept an eye on all her employees, but their attention was also directed her way. After one team meeting, one of them said, "Randi? You've gotten so quiet."

Randi thinks it's rare for pressure to come from just a single source, and she thinks back to a certain winter evening. Her father-in-law had died, and after the burial she had a falling out with her husband. And the family that had just sat together in church now watched her explode with so much fury that afterwards, Randi didn't know how it would end.

"Something burst in me that day," Randi says. A few months later, she had a breakdown.

She has a hard time remembering what actually happened. What she knows is that it was early on a weekday morning, and that her body started trembling. That she couldn't get out of bed. And that her husband came rushing out of the bathroom and tried to soothe her while she shook and made sounds she cannot recall.

THINGS CAME TO AN IMPASSE

The mornings were the worst. Randi was on sick leave, down with depression. If she got up, she knew she'd have to pick out some clothes to wear, and that decision was so paralyzing that she would remain in bed. She longed for someone to send her a text or an email, to visit her. But it grew very quiet around her.

When she returned to her job, her staff showed such concern that it still moves Randi when she speaks of it today. And the therapist who'd upset the rest of the team by limiting her workload earlier now approached Randi privately. She told Randi, "I went through the same thing."

Organisationally, however, everything was exactly the way it was before.

Less than six months later, she was forced to go on sick leave once more, this time due to stress. Her relationship to her workplace was never the same again. Things came to an

“

A person with depression will often back out of the things you usually do together. It may seem as if you're being rejected, and perhaps you feel nervous about making the depression worse by persisting. Yet it's very likely that the person is longing for company and just can't deal with the practical aspects. Don't be afraid to say, "I'll come over then, and help you get your jacket and shoes on." You're not doing them a favour by leaving them alone."

impasse that was broken only by Randi being fired. At the disciplinary meeting, she brought a union representative to do the talking. Silently she listened to the statement from HR, saying that her illness had turned Randi into an employee they could no longer use. A year previous, she'd been a valued employee. And silently she observed how ill at ease her boss appeared to be.

HOW CAN I GET WELL AGAIN?

Should others know that Randi's suffered from depression? or not? Randi tries to balance openness and privacy. When she applied for a new job, the word *depression* never passed her lips. "I knew that if it did, they'd take someone who'd always been well," she says. But her new employer knows about it, as do her co-workers. One of the reasons is that Randi has spoken publicly on several occasions about the course of her illness.

When she lay ill, her thoughts had circled around one thing: *How can I get well again? Will I ever get better at all?* She did get well, but she isn't the same. It's like having a ruptured muscle in her brain, she says. When she notices herself getting tired and unfocused, she has to listen to her body. She's chosen not to take another leadership position. She meditates.

But it's not only herself that she wants to be aware of. If another person seems unwell, it's easiest to ignore it. Easiest not to risk being rebuffed, to tell yourself it'll only make things worse. But Randi has decided that she won't look the other way. She walks over and she asks, "How are you feeling?" ●

Randi Bitsch

AGE

56

DIAGNOSIS

Randi has had three episodes of moderate depression – the first in 1999, the second in 2004 and the most recent in 2013. Shortly after reporting back to work after recovering from the last episode, she was diagnosed with stress. Mindfulness meditation has helped her look after herself since then, and Randi feels well these days.

RESIDENCE

Copenhagen

EDUCATION

Physiotherapist, master's degree in the psychology of organisations

VOLUNTEER WORK

Treasurer, Depression Association of Denmark

MARITAL STATUS

Married

OCCUPATION

Project manager for a municipal health team

CHILDREN

Two adult children

ONE THING I BELIEVE THAT HEALTHY PEOPLE FREQUENTLY DON'T KNOW ABOUT DEPRESSION

A person with depression will often back out of the things you usually do together. It may seem as if you're being rejected, and perhaps you feel nervous about making the depression worse by persisting. Yet it's very likely that the person is longing for company and just can't deal with the practical aspects. Don't be afraid to say, "I'll come over then, and help you get your jacket and shoes on." You're not doing them a favour by leaving them alone.



FROM IDEA TO PATIENT

1 RESEARCH

In Research, we identify new disease targets and establish and confirm an understanding of the mechanism of action for new, safe drug candidates. Researching new treatments requires deep insight into the disease and into the unmet medical needs of patients. Researchers work to understand the underlying disease biology and identify new targets in the brain. New substances are then selected based on efficacy and are tested for safety and tolerability, before being selected for drug development.



2 DRUG DEVELOPMENT

In Drug Development, we conduct clinical studies globally to establish evidence for new drug candidates, we engage healthcare specialists in scientific discussions to enhance the understanding of our clinical results, and we work to develop safe, reliable and efficient manufacturing processes. Safeguarding the rights, safety and wellbeing of study participants is of the greatest importance.

3 MANUFACTURING

The manufacturing process has three major stages: Chemical Production where the Active Pharmaceutical Ingredient is made; Pharmaceutical Bulk Production where the product is produced; and the Finished Goods Production where the packs are assembled. We strive to create the best supply chain in the pharmaceutical industry through continuous improvement of reliability, quality and cost. Every year more than 100 million finished goods are sent to distributors, wholesalers and hospitals through close collaboration with our sales affiliates.

Developing new and innovative treatments is complex. It takes approximately 10-15 years for a new drug to move through the pharmaceutical value chain from when an idea is conceived until an approved treatment is made available to patients.



5

SALES

In Sales we inform and educate key HCPs, who are responsible for managing treatment with prescription drugs. We have sales representatives in more than 50 countries. Our activities towards HCPs aim to ensure a correct understanding of our products and their use. We also engage experts and leading specialists as speakers for educational events, where information is exchanged with the purpose of enhancing patient care.

4

MARKETING

Our products are registered globally in more than 100 countries. We produce and conduct scientific and promotional events to educate healthcare professionals about the safe and efficacious use of our products. We engage decision-makers in activities to help them prioritise psychiatric and neurological disorders and argue the societal value of our products based on thorough assessments.

ACTING RESPONSIBLY

Throughout the value chain, we apply precise policies and procedures to ensure that we do the right thing – at the right time. Hence, a lot of collaboration takes place between the 5 steps of the value chain. We take action to provide a safe and healthy working environment for our employees and we act responsibly to minimize our impact on the environment. Our efforts are certified to international standards and recognized by external experts, including the UN Global Compact. Furthermore, all activities taking place in Lundbeck are governed by a Code of Conduct. In addition to this, more specific policies, guidelines and procedures ensure that we perform in our job roles as intended and that we propose improvements whenever this is needed.

STORIES FROM OUR ORGANIZATION

At Lundbeck, we are engaged in the entire pharmaceutical value chain. These are some of the stories from our organization, letting you into the work that we do to improving patient lives.

DEVELOPING TOMORROW'S DRUG

At Lundbeck, we specialize in developing treatments for psychiatric and neurological disorders, and we are committed to establishing new and improved ways to treat people affected with depression, schizophrenia, Parkinson's disease and Alzheimer's disease.



“

Lundbeck has the desire, determination and drive to think big in order to improve the lives of people living with schizophrenia.”

These diseases represent a large burden to the people affected and to society in general. Currently, Lundbeck is undertaking a very promising development project named Lu AF35700 – a molecule we have discovered in our own research labs. The compound is being developed to treat schizophrenia – more specifically, Treatment Resistant Schizophrenia (TRS). Lundbeck has successfully been researching in treatments for general schizophrenia for decades, and is now pursuing TRS as a target indication for the first time. The group of patients with schizophrenia who are treatment-resistant constitute a very difficult population to treat, and, unfortunately, they do not have good treatment options. With Lu AF35700, Lundbeck provides a new treatment option for this patient population where the medical need is evident. Offering an effective treatment for TRS is difficult and many have tried, but failed. Chief Project Director, Jesper V. Kjerulff, says: “This clearly shows that Lundbeck has the desire, determination and drive to think big in order to improve the lives of people living with schizophrenia.”

JOINING FORCES IN CROSS-FUNCTIONAL ALZHEIMER'S DISEASE STRATEGY PROJECT

Alzheimer's disease is one of Lundbeck's key disease areas. Due to the aging world population and lack of efficient treatments, the unmet medical need in Alzheimer's disease is huge and increasing.

The external environment is developing rapidly, and there is a large focus among scientific, medical, regulatory, payer and policy stakeholders on identifying and facilitating new approaches towards finding a treatment that can delay the onset or modify the progression of the disease. An interdisciplinary Alzheimer's disease strategy project is currently ongoing, gathering insights, expertise and know-how from broad parts of our organization, including R&D and commercial disciplines. The goal is to uncover our knowledge about the disease throughout

the value chain, making sure our approach to and work with Alzheimer's disease is aligned and supports internal as well as external progress in the field. Anne Vinther Morant, Regulatory Intelligence Strategy Leader in Lundbeck and coordinator of the cross-functional Alzheimer's disease working group, explains: "We need to work closely together across functions to define the right path for regulatory approval. The ultimate goal is to ensure availability of the best possible treatments for patients with Alzheimer's disease."



“

We need to work closely together across functions to define the right path for regulatory approval.”

PACKAGING FLEXIBILITY TO SUPPORT PRODUCT LAUNCHES

Lundbeck is currently launching a number of new products in many markets worldwide.

In order to handle growing demand and production orders (POs) of varying size and frequency, Lundbeck must have the required packaging processes and capacity in place. As a consequence, Lundbeck initiated in 2014 a changeover project affecting our entire Commercial Packaging facility at its headquarters in Valby, Denmark. At the packaging facility, POs vary from 50 to 250,000 packages each, and approximately 76 million blister packs, 6.4 million drops and ampoules, 4.6 million containers and 400,000 kits are prepared each year on six flexible packaging lines. Previously, and before the new changeover project, time was the most important measure of the success of our packaging lines. Now, a successful changeover is measured on the basis of many other criteria besides time, such as flexibility, cooperation, smooth workflows and resource allocation organized by the operators and managers. Clever resource management results in more efficient use of time and manpower, fewer mistakes, and greater collaboration between the packaging lines.

"How the changeovers for the next production order should be handled are agreed among the operators. These agreements, together with measurable KPI's on the changeover process, are creating involvement and engagement among the employees," explains Manager in Commercial Packaging, Tina Heberg Andersen.

SHARING ENGAGING EDUCATIONAL CONTENT WITH PHYSICIANS

As one of the only companies dedicated to psychiatric and neurological disorders, Lundbeck is uniquely positioned to share rich educational material with physicians to support positive patient outcomes which leverage the latest research, guidance and treatment options.

With a new and dynamic website which allows HCPs to stay up to speed on the latest developments in psychiatry and neurology, we publish news, interviews and highlights from key conferences and events globally. More importantly, the site facilitates experience and knowledge-sharing through

peer-led content, opinion pieces and interviews with the key opinion leaders around the world. The online center for medical information and education is the first platform in Lundbeck's history created to share news and highlights in real time from key congresses and events. The cross-functional website team works with key opinion leaders and advocacy groups to create content and share it in less than 12 hours with physician attendees and those unable to attend the events. Senior Director and Head of Global Customer Interaction Management at Lundbeck, Julie O'Donnell, explains: "The site provides a valuable resource for the psychiatry and neurology community – allowing them to be aware of key sessions and hear the perspectives of their peers and consume this content anywhere at any time on any device."

www.onCNS.com



“

The site provides a valuable resource for the psychiatry and neurology community – allowing them to be aware of key sessions and hear the perspectives of their peers.”



“

Results show that the implemented Lean processes have increased productivity and as a result decreased over-time at the Nordic Distribution Center.”

INCREASING PRODUCTIVITY WITH A NORDIC DISTRIBUTION CENTER

Due to the expansion of Lundbeck's business with many new product launches, lack of capacity and very old warehouse buildings, Lundbeck's Nordic Distribution Center, a fully automatic high bay warehouse, was built in 2012.

The new warehouse gathers seven smaller manual warehouses spread all over the site at headquarters in Valby, Denmark, with the purpose of increasing capacity and compliance and reducing lead time of finished goods and clinical trial orders. Underpinning the work and daily tasks at the Nordic Distribution Center is a strong Lean culture. Lean at Lundbeck means reducing waste and improving quality through employee involvement and making room for continuous improvements. In order to succeed with handling a varying number of orders, the Nordic Distribution Center is committed to process and flow optimization and improved target process, as well as resource manage-

ment. Resource management is particularly in focus, and a resource speedometer has been introduced to better balance the workload among employees and to manage many different types of challenges in the warehouse. The necessary overview of tasks that need to be completed within a given time frame is required for the warehouse employees to deliver on their targets and understand how their efforts fit into a larger strategy. "Results show that the implemented Lean processes have increased productivity and as a result decreased overtime at the Nordic Distribution Center," explains Director of Service Supply & Distribution, Camilla Pagh.

At 57, He Wei's thoughts often revolve around the future. But he tries not to dwell on it.

LIFE GOES
BY
IN A
GLANCE



Like others who have Parkinson's disease, He Wei's face has grown expressionless over time. He calls it his poker face.



He Wei is playing Chinese chess at the dining table with his 95-year-old mother. First move – it's always him. Then he makes a funny face and waggles his fingers behind his head, so he looks like a rabbit. That usually makes her laugh, and he can coax her into moving a piece. Then it's his turn again. Gradually, Mrs Wu comes to life and starts to play without prompting.

Other days, he mixes red and green beans together in a bowl for her to separate. Or they transcribe poems she was once fond of. He Wei comes up with these activities to amuse her – and to exercise her brain. For Mrs Wu has Alzheimer's disease. She was diagnosed 15 years ago, and prior to that she'd been suffering from serious depression. Since the mid-'90s, He Wei has lived with his mother to look after her. Today, a light winter snow is falling outside. When it's springtime, Mrs Wu likes to soak up a bit of sun in a small park nearby. So he has manoeuvred her wheelchair down the stairs from the third floor before carrying her down as well. He was always able to muster the strength before, but not anymore – and it's only



“

First move – it’s always him. Then he makes a funny face and waggles his fingers behind his head, so he looks like a rabbit. That usually makes her laugh, and he can coax her into moving a piece.”

getting worse. Beneath his calm exterior there lurks a sense of unease. He is racking his brains, trying to figure out how to tackle their future.

Mrs Wu doesn't know what preoccupies her son. Once in a while she asks, "Why are you walking so oddly?" The answer is that he has Parkinson's disease. But that isn't something he's ever told her.

HE WEI MADE HIS WAY FORWARD

When he was a boy, He Wei says he entertained no hopes for the future – unlike Chinese teenagers today. In the 1960s, Chairman Mao attacked his adversaries in the Communist Party apparatus, but he didn't stop there; a violent wave of purges swept through schools, universities and hospitals. Educated Chinese, such as He Wei's parents, found themselves in peril, and like millions of other citizens they were forced to labour in the fields. He sums up those years in a few words: "My parents were not by my side."

At 11, he had to fend for himself in Beijing, and he recalls how he tried to cook vegetables by scorching them first and then pouring oil over them. The only thing he hoped for was to not attract the attention of the Party.

And yet He Wei also yearned to improve himself. Later, when he was working at a factory, reforms made it possible for young people to apply to university again. He immediately signed up for evening classes to make up for his lost schooling and managed to be accepted into an electrical engineering programme. Unobtrusively, He Wei made his way forward. Leisure time was out of the question. Along the way, he developed a method to simplify a time-demanding test of an electronic device. With this invention, the company he worked for was able to save time and money. People above him began to take notice, and the attention did not frighten him; on the contrary. They praised him. And yes, He Wei says – the praise tempted him to hope. There was, after all, one thing that he very much aspired to professionally.

YEARS BEFORE, HE'D HAD A DREAM

It is five years ago now that He Wei started losing his balance. Again and again, he almost fell while biking. Finally he asked his mother's neurologist if she wouldn't examine him too. And after a few tests, the doctor had a diagnosis. "Parkinson's," she said. Parkinson's? He didn't know anyone who had the disease – only celebrities like Muhammad Ali. He could see before him how the boxer had lit the Olympic flame in Atlanta with an arm he could barely control, while the other arm hung limp and shaking. Now He Wei had the same neurological disorder. He stumbled out of the hospital and wandered the streets, until there was no more avoiding it. He had to go home and look cheerful, so that he wouldn't upset his mother.

But his co-workers or his manager would have to know the truth. When He Wei tried to find words for what had happened to him, he burst into tears. Throughout his working life, he had designed computer control systems, and he'd been commended for helping the state-owned company he worked for compete on the open market. Now his manager offered to let him work from home for most of the week. And that's what He Wei did. But the disease wore him down. He became exhausted more easily, and when programming, he found it difficult to strike the keys quickly and accurately. Tasks that before had taken him a day now stretched out to three.



At the same time, his mother required more and more care. He Wei's situation was stressful – and getting worse by the week. Yet there did exist a solution, which he now considered: he could seek early retirement on the basis of illness. Professionally, he'd come as far as he could. Years before, he'd had a dream he thought he could realize. But then both of his parents had gotten seriously ill, and they'd needed him.

When it came down to it, He Wei says, it wasn't too painful for him to let go of his professional career. The crucial sacrifice had been made years ago.

IMAGINING THE FUTURE

Like others who have Parkinson's disease, He Wei's face has grown expressionless over time. The disease paralyzes his facial muscles, so they can no longer move as before. He calls it his poker face. For other people, it can be hard to see how he's feeling.

Once, he longed to study abroad and earn a PhD. Instead, he chose to care for his sick parents – and then, after his father's death, his sick mother. He Wei was, and is, the only person able to take on this task. He's an only child, he explains, and bears sole responsibility for Mrs Wu, no matter what. These days, he broods and wonders how he'll manage to carry her the last leg of the journey. If his own condition deteriorates, he may have to put her in a nursing home. That's his worse-case scenario. A good nursing home costs far more than he can afford, yet he fears that at an ordinary institution, his mother will suffer many indignities. Resources are so limited, he says, that they strap Alzheimer's patients to their beds. But what other option does he have? Imagining the future makes him so agitated that he has to force himself not to think about it too much.

Other Parkinson's patients have sympathy for He Wei's situation and what he's struggling with. In the beginning, he talked to them in chat rooms; now he's part of a group whose members call and visit each other. They provide support and encouragement, and their company makes He Wei's life easier. "Life goes by in a glance," he says. "I couldn't accomplish everything in my life. But I did my best."

And he still does. Every day, he strives to entertain his mother and stimulate her brain. It does him good as well, he says. When he makes faces, for instance, it exercises the stiff muscles in his face. And then there's the more immediate reward: his mother chuckling with delight. ●

A study of five European countries found that 1.6% of the population aged



Many Parkinson's disease patients also suffer from disease related non-motor symptoms e.g.

low blood pressure,
sensory problems,
sleep disorders,
psychiatric problems and
dementia

Parkinson's disease usually develops in people in their late





“
I’m afraid that my
Parkinson’s will get
worse, forcing me
to put my mother
in a nursing home.”

He Wei

AGE

57

DIAGNOSIS

Mild to moderate Parkinson's disease, as well as Ménière's disease, an ear disorder that causes dizziness, diagnosed in 2010.

RESIDENCE

Lives with his mother in their own apartment in Beijing.

MARITAL STATUS

Divorced

OCCUPATION

Former deputy chief engineer in a state-owned company. Took early retirement in 2012 due to Parkinson's disease.

CHILDREN

None

MY HOPES FOR THE FUTURE

My mother is 95, and I hope that I have the strength to look after her until the end.

MY FEARS FOR THE FUTURE

I'm afraid that my Parkinson's will get worse, forcing me to put my mother in a nursing home.

Chunhua Wu, He Wei's mother

AGE

95

DIAGNOSIS

Diagnosed in 1986 with depression, which she's still being treated for, and in 2002 with moderate to severe Alzheimer's disease.

RESIDENCE

Beijing

MARITAL STATUS

Widow

OCCUPATION

Former department head in the Chinese Academy of Medical Sciences, now retired.

CHILDREN

One son

PARKINSON'S DISEASE

Approximately

6 million

patients worldwide is estimated to be affected by Parkinson's disease.

Parkinson's disease is the second most common

**neuro-
degenerative
disorder.**

The prevalence of diagnosed patients with Parkinson's disease will likely double from



due to increased life expectancy.

Parkinson's disease is a progressive, degenerative disorder characterized by resting tremor, muscular rigidity, bradykinesia and postural instability. The motor symptoms are caused by the degeneration of dopamine-producing cells in the brain.

In the late stage of the disease, patients deteriorate strongly and are often confined to a chair or bed.

Many Parkinson's patients also suffer from disease related non-motor symptoms e.g. low blood pressure, sensory problems, sleep disorders, psychiatric problems and dementia. The non-motor symptoms are largely caused by dysfunction of non-dopaminergic neurotransmitter systems.

Parkinson's disease is the second most common neurodegenerative disorder. It is estimated to affect approximately 6 million patients worldwide, with 4 to 20 new cases reported per 100,000 people per year. Parkinson's disease usually develops in people in their late 50s and early 60s, though rarer forms of the disease can develop before the age of 40. One study of five European countries found that 1.6% of the population aged 65 or over had Parkinson's disease. According to the International Parkinson and Movement Disorder Society, the prevalence of diagnosed patients with the disease will likely double from 2010 to 2040 due to increased life expectancy.

“Shaking palsy”

Parkinson's disease is a condition that has been known about since ancient times. It is referred to in the ancient Indian medical system of Ayurveda under the name *Kampavata*. In Western medical literature, it was described by the physician Galen as “shaking palsy” in AD 175. However, it was not until 1817 that a detailed medical essay was published on the subject by London doctor James Parkinson.

The publication was entitled “An Essay on the Shaking Palsy”. This established Parkinson's disease as a recognized medical condition. The essay was based on six cases he had observed in his own practise and on walks around his neighbourhood. The essay was intended to encourage others to study the disease. Some 60 years after it was first published, a French neurologist by the name of Jean Martin Charcot did exactly that. Charcot was the first to truly recognize the importance of Parkinson's work and named the disease after him.

Source:
<http://www.parkinsons.org/parkinsons-history.html>



48
million people

worldwide have dementia (Alzheimer's disease is the most common cause of dementia and may contribute to 60-70% of cases).

It is predicted that the number of people affected by dementia will almost double every



The total global societal costs of dementia are estimated to be USD



604
billion

ALZHEIMER'S DISEASE

Alzheimer's disease is the most common cause of dementia and may contribute to 60-70% of cases. The life expectancy from diagnosis to death is 7-9 years.

Over the course of the disease large areas of the brain degenerate, resulting in cellular loss and dysfunction, a gradual loss of memory, problems with reasoning or judgment, disorientation, difficulty in learning, loss of language skills and decline in the ability to perform routine tasks.

People with Alzheimer's disease can also experience changes in their personalities and behavioural problems, such as agitation, anxiety, delusions and hallucinations. These changes increasingly impact upon the person's daily life, reducing their independence until ultimately they are entirely dependent on others resulting in an enormous impact on the patient's caregiver. Most caregivers are close relatives who provide care in the home – a demanding and exhausting role that represents a huge emotional and physical burden.

Alzheimer's disease is the most common neurodegenerative disorder and occurs most frequently in people over 65 years. Worldwide, 48 million people have dementia and there are 7.7 million new cases every year. With the demographic shift towards an increasingly elderly population, it is predicted that the number of people affected by dementia will almost double every 20 years. The total number of people with dementia is projected to 75 million in 2030 and by the year 2050, 135 million people will have the condition. Dementia is one of the major causes of disability and dependency among

older people worldwide. In 2010, the total global societal costs of dementia were estimated to be USD 604 billion. This corresponds to 1.0% of the worldwide gross domestic product (GDP).

A new standard for understanding neurodegenerative disorders

German physician Alois Alzheimer, a pioneer in linking symptoms to microscopic brain changes, describes the haunting case of Auguste D., a patient who had profound memory loss, unfounded suspicions about her family, and other worsening psychological changes. In her brain at autopsy, he saw dramatic shrinkage and abnormal deposits in and around nerve cells.

Dr. Alzheimer died in 1915, never suspecting that his encounter with Auguste D. would one day touch the lives of millions and ignite a massive international research effort. Scientists recognize Dr. Alzheimer not only for his groundbreaking characterization of a major disease, but also as a role model. He set a new standard for understanding neurodegenerative disorders by establishing a close clinical relationship with his patients and using new scientific tools to determine how symptoms related to physical brain changes.

Source:
http://www.alz.org/research/science/major_milestones_in_alzheimers.asp



THINKING OF ANOTHER HUMAN AS A BURDEN

Patricia Ekstrom has moved back home to take care of her mother. Eleanor has mild to moderate Alzheimer's disease, and there's a good reason why Patricia understands the job that lies ahead.





Patricia knows what awaits her mother. Better than most, because she's been looking after Alzheimer's patients in a nursing home for years.



family photos. The disease has primarily attacked her short-term memory and overall perspective. But the day will come, Patricia says, when she'll remove the knobs from the stove, and when she'll change Eleanor's nappies because her mother no longer knows how to use the toilet. Demanding tasks lie ahead, but Eleanor isn't going to go into a nursing home. Not if it's up to Patricia.

She would fear for her mother's dignity.

Working at a nursing home is a tough job. The heavy lifting wears on the body, and the gloomy atmosphere weighs on the mind. The old people there are often distraught. What's the point in living, they lament. Their families have forgotten them, and they're of no use to anyone. Sometimes, Patricia says, the exhausted aides end up shouting back at the residents, or handle them roughly, or can't deal with it when a resident strikes out in a burst of anger. You have to try not to take it personally, she says, for violent reactions are part of Alzheimer's disease. Perhaps you made a sudden movement or did something that startled the person. Patricia tries to be a calming influence when things get agitated.

The front door of the small house in Albany opens into a room that tells you a great deal about the person who lives there. Photos from decades of graduations, weddings and baptisms crowd the walls. A doll collection fills the shelves next to the TV, a blanket that one daughter crocheted long ago is draped over the armchair, and on your way to the kitchen you pass a series of plates featuring Betty Boop, the cartoon character who was everybody's darling in the 1930s. At 85, Eleanor lives in this house with her memories, and things she's hung onto since she first moved here as a young wife.

Eleanor detests her cane and doesn't use it unless her daughter Patricia reminds her. A couple of years ago, she started having falls. The stairs that her husband, long since deceased, had built of knotty pine became too dangerous. There was something else that also worried Patricia, even though she tried not to think about it, but one night she could ignore it no longer. A police officer called to inform her that he was holding her mother in custody at the police station – not in Albany, but in Massachusetts, an hour's drive away. Eleanor had lost her way, and the officer had pulled her over because she was driving

around randomly after dark and without lights. "Thank God you did!" Patricia exclaimed. Eleanor loved driving, but recently she'd seemed oddly hesitant behind the wheel.

After that night, Patricia took her mother to a neurologist, who gave her the diagnosis that had already occurred to Patricia. Eleanor had to relinquish her car keys, much against her will. She still isn't completely convinced that she suffers from any disability. "Everybody forgets," she says. "That's life – what can you do?" Yet Eleanor does have mild to moderate Alzheimer's disease, and Patricia's moved home to be with her.

DEMANDING TASKS LIE AHEAD

Patricia knows what awaits her mother better than most, because she's been looking after Alzheimer's patients in a nursing home for years. For the time being, Eleanor can be home alone while Patricia's at work. Eleanor keeps off the stairs, and she isn't overwhelmed by the many components of a task like taking a shower – undressing and turning on the tap, adjusting the temperature, washing and drying herself off, opening the drawer with clean underwear. She looks forward to her weekly lunch date with her older sister and recognizes every face in

“

The day will come, Patricia says, when she'll remove the knobs from the cooker, and when she'll change Eleanor's nappies because her mother no longer knows how to use the toilet.”

Alzheimer's disease is the most common neurodegenerative disorder and occurs most frequently in people over

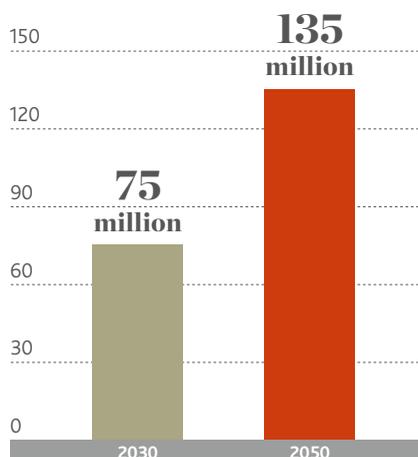
65
years



The life expectancy from diagnosis to death is

7-9
years

PROJECTED NUMBER
OF PEOPLE WITH DEMENTIA



The total number of people with dementia is projected to 75 million in 2030 and by the year 2050, 135 million people will have the condition.



“
Even when the disease is advanced, people with Alzheimer's will recoil if you're hard on them – and calm down when you touch them gently.”

– Patricia

And when residents grow disconsolate, she tells them that there's a reason they're still alive, for otherwise “the man upstairs” would have taken them home. And the reason for living right now is to smile at each other, and she clowns around a bit to tease out those smiles.

The administration has stated that staff should avoid forming attachments to residents. Patricia turns a deaf ear. She knows that human connection makes a difference. Even when the disease is advanced, people with Alzheimer's disease will recoil if you're hard on them – and calm down when you touch them gently. They are human beings to the very end, Patricia says, and they still like being stroked on the cheek.

SHE KEPT HER SENSE OF HUMOUR

Once, Patricia's mother was the sort of woman you went to see for good advice – if you were prepared to hear the truth. Bowling was one of her great pleasures. And though her husband was king of the castle, she was strong-willed. When he wanted to kick

Patricia out of the house because she'd gotten pregnant, Eleanor stood her ground. “If she leaves, I'm leaving with her,” she said, and that's something her daughter will never forget. Patricia remained in the small house and had a boy, who is now in the military; Eleanor helped her raise him. Photos of that Eleanor hang on the wall. Now she can't keep track of which month it is or the name of the president. Yet she's kept her sense of humour. Recently, Patricia was driving in a roundabout and kept missing their turnoff, and with a glint in her eye, Eleanor said, “So – now you're driving like me?”

Patricia tries to hang on to those sorts of moments, before that woman drifts away too. But no matter how much of her mother the Alzheimer's disease succeeds in taking, she knows that Eleanor will be able to feel how others are treating her. That's why Patricia is determined to care for her herself. “If you think of another human being as a burden,” she says, “you'll treat them as a burden. And that's not okay.”

As for Eleanor, she isn't concerned about the future. Every morning she places her



favourite doll upon the bed, and only a single crack in its china face indicates that she's had it since she was a small girl. Back then, it was her friend, comforting her when she felt lonely. The porcelain cheeks still have a fresh glow, and Eleanor says the secret is to rub them with a bit of butter. The doll in the red velvet dress used to have a name. Eleanor can't remember it anymore, but that doesn't bother her. Every morning, she chats with the doll, just as she has done for years. ●

“Good morning!” she says.
“You're looking good today!”

Patricia Ekstrom

AGE

58

RESIDENCE

Lives with her mother in Albany, New York, USA.

MARITAL STATUS

Single

OCCUPATION

Certified nursing assistant at a nursing home, where she looks after Alzheimer's patients

CHILDREN

One son, two grandchildren

MY HOPES FOR MY MOTHER'S FUTURE

I hope she goes peacefully, before things get too bad.

MY FEARS ABOUT MY MOTHER'S FUTURE

I fear she will suffer, and she doesn't deserve that.

MY PLAN FOR WHEN MY MOTHER'S ALZHEIMER'S DISEASE PROGRESSES

The state of New York has a caregiver programme for people who take care of relatives at home. When my mother needs full-time care, I'm planning to quit my job and take advantage of that possibility.

ONE THING PEOPLE WITH HEALTHY PARENTS DON'T REALIZE ABOUT HAVING A PARENT WITH ALZHEIMER'S DISEASE

You've been spared having to watch a parent deteriorate. Consider yourself blessed.

MY ADVICE FOR CAREGIVERS IN MY SITUATION

You need to make some time for yourself. I have a few very close friends I can talk to, neighbourhood people I grew up with. Thursday is my evening off and we meet up for cocktails. I also have a special spot in the yard, behind the garage, where I go to sit when I need to be alone.

Eleanor Ekstrom, Patricia's mother

AGE

85

DIAGNOSIS

Mild to moderate Alzheimer's disease, diagnosed 2014.

RESIDENCE

Albany, New York, USA.

MARITAL STATUS

Widow

OCCUPATION

Former housewife and shop assistant, now retired.

CHILDREN

Two daughters, one son.



HANS LUNDBECK

At the outset in 1915, Hans Lundbeck's company worked on the principle that no business was too small as long as it was good business.

NARROWING FOCUS, BROADENING SCOPE

Events, dear boy, events, is famously attributed to one weary prime minister in response to being asked about what he feared most. Over the course of 100 years there are going to be plenty of those, but there also needs to be planning and strategy along the way. Otherwise, how does a company like Lundbeck arrive at its current global success?

THE EARLY YEARS

When Hans Lundbeck returned to Denmark in 1912 after time spent abroad, business was butter. By the time his company was founded three years later, the product portfolio had expanded to include everything from saccharin and biscuits to foils and photography.

Denmark's neutrality in the First World War gave it a competitive advantage in that there was no need to move production from consumer goods to arms. Although Lundbeck was a consciously small and fleet-footed trading company, it was no corner shop: goods were delivered directly

How does a company make the century-long journey from eclectic dealer in anything that turns a profit to a world class, pharmaceutical company specializing in matters of the mind?

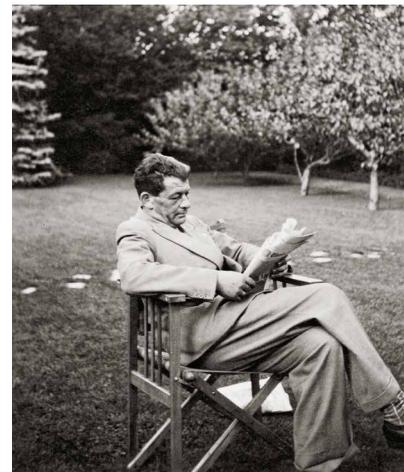
GRETE LUNDBECK

Lundbeck's first employee ended up marrying its founder and securing the future of the company by establishing the Lundbeck Foundation.



EDUARD GOLDSCHMIDT

The recruitment brought his chemical and pharmaceutical background to Lundbeck, along with a lucrative portfolio of licences.



to customers in a pre-internet inspiration for the web-based giants of today.

In 1924, the recruitment of Eduard Goldschmidt with his chemical and pharmaceutical background may have been in response to the growing interest in drugs arising from the conflict. The fact that he came with a lucrative portfolio of licences would also have been welcome. Whether the hire was visionary is unresolved, but it was certainly favourable in its timing. With Alexander Fleming's discovery of penicillin just four years away, Goldschmidt's experience put Lundbeck in – if not the driving seat – just the right place to exploit the nascent antibiotics industry.

In the same year as Goldschmidt's appointment, the first human electroencephalogram was recorded in Germany. This technique, together with the development of insulin shock therapy for schizophrenic patients, was evidence of the growing influence of hard science as a tool for unlocking the secrets of the human psyche. Other contemporary research into electroconvulsive therapy, psychosurgery and brain cells suspected of causing epilepsy amplified the call to Lundbeck's future.

LUNDBECK LUMSÅS

This former dairy in Zealand was acquired in 1961 and became Lundbeck's centre for the production of active compounds.

**LUNDBECK FOUNDATION**

As well as ensuring stability for the company and its ownership, the Foundation offered financial support for medical research.

**TRUXAL®**

Lundbeck's success with Truxal® over two decades had a positive effect on its overall production and sales.

BUILDING THE BUSINESS

Denmark's response to the Depression of the 1930s was the introduction of exchange controls to protect the economy and boost employment. Lundbeck therefore switched from the import of expensive, retail-ready drug products to purchasing their more cost-effective base materials in bulk. The company's own production facilities followed, with additional space and staff required for this growth in operations running in tandem with the company's size and reputation.

Lundbeck's first original medicine, the wound healing Epicutan®, arrived in 1937 and reflected the confidence of the business, which sought further avenues for research opportunities – a characteristic that was later reborn in and remains with the company today. Then, in 1939 in its quest for greater manufacturing capacity, Lundbeck moved to Valby on the outskirts of Copenhagen and is still headquartered there today.

At the outbreak of World War II, and with staff now numbering 45, Lundbeck had established its manufacturing and

development base sufficiently to maintain production despite a shortage of raw materials. The war years saw the loss of Hans Lundbeck, who died in 1943, and Eduard Goldschmidt who had to leave as a result of the Nazi-led invasion by Germany.

Hans Lundbeck had earlier married Alma Sterregaard, Lundbeck's first employee, who thus completed her own journey from first hire to first lady, changing her name to Grete Lundbeck. The marriage later secured the future of the company and its activities, when Grete established the Lundbeck Foundation prior to stepping back from her day-to-day activities in the group. The Foundation would go on to provide financial support for research into disease. Grete chaired the Foundation until her death in 1965. Two years later, the Goldschmidt family's interest was bought out with the Foundation becoming the sole owner of Lundbeck.

INTENSIFYING RESEARCH

Targeted research into new medicines accelerated after the war, while Danish companies benefitted from the windfall of

German patent rights arising from the post war reparations. Lundbeck acquired the rights to a compound that it developed into the acute pain reliever Ketogan®, a hugely successful product that established the company on the growing world markets. Tyrothricin, a wound infection treatment, was Lundbeck's first antibiotic and led to a move into bacteria cultivation and Lundbeck's new microbiology laboratory at Valby.

Away from Lundbeck's own progress, matters continued to move rapidly in the world of research into brain and psychological functions. In 1949, the areas of the brain that control internal organs were mapped with electrodes being used to stimulate those areas that could produce specific physiological responses. In the same year, the depressive disorder medication, Lithium, was developed and followed by a series of antipsychotic drugs over the course of the 1950s.

FIRST ANTIPSYCHOTIC DRUG

Lundbeck launched its first antipsychotic drug in 1959, the massively successful Truxal®. This became the company's

best-selling product for two decades and drew it further into its eventual psychiatric specialism. The commercial success, and an employee count of 580 in Denmark alone, drove the need for more capacity. A former dairy was acquired in 1961 and became the centre for the production of active compounds. Lundbeck's first antidepressant also came at this time with the release of Saroten®. This was a fertile area of research, which also brought Cipramil® and Cipralex® to market and marked the beginning of an era of antidepressants for Lundbeck.

As the company moved into the 1970s, research elsewhere saw the arrival of new scanning technologies, which allowed non-invasive insights into the brain and its activities. An electrical engineer built the first CAT scan prototype. The MRI scanner arrived in the US, while PET scans allowed the monitoring of blood flow and oxygen utilisation in the brain. The 1970s also saw Lundbeck moving further into the development of medicines for the treatment of neurological disorders, while

supplementary activities, cosmetics and so forth, ceased. Microbiological research was also abandoned since there was little likelihood of discovering new antibiotics by this time.

GROWING GLOBALLY

By the 1980s, sales growth was slowing as a result of poor marketing. Research activities were therefore intensified and drugs were licensed from other pharmaceutical companies, thus enabling new products to take over when existing patents expired. Later, in 1997 in a move that increased the company's international profile, the Lundbeck Institute was established. Its objective was the education of HCPs worldwide on psychiatric and neurological treatments, along with the consequent improvement in patients' quality of life.

With its growing commercial success and reputation, Lundbeck was listed on the Copenhagen Stock Exchange in 1999. This gave it access to sufficient capital for new

projects and allowed it to expand globally through strategic acquisitions. In 2009, the acquisition of Ovation Pharmaceuticals delivered Lundbeck's first commercial platform in the US, the worlds biggest market for pharmaceuticals.

The 100-year voyage to its current, globally renowned status has seen Hans Lundbeck's general trading company grow from one man and his future wife into a global company with some 5,300 employees across 55 countries. Accelerating research, technological developments and an increasingly coherent strategy have given Lundbeck the opportunity to focus ever more tightly on – and develop an increasingly deep understanding in – psychiatric and neurological disorders. The treatments that continue to improve patient lives have expanded the company's horizons and broadened its scope out onto the world stage.

Events may have happened along the way, but it is clear that foresight, intelligence and planning have always been at the heart of Lundbeck's success. ●

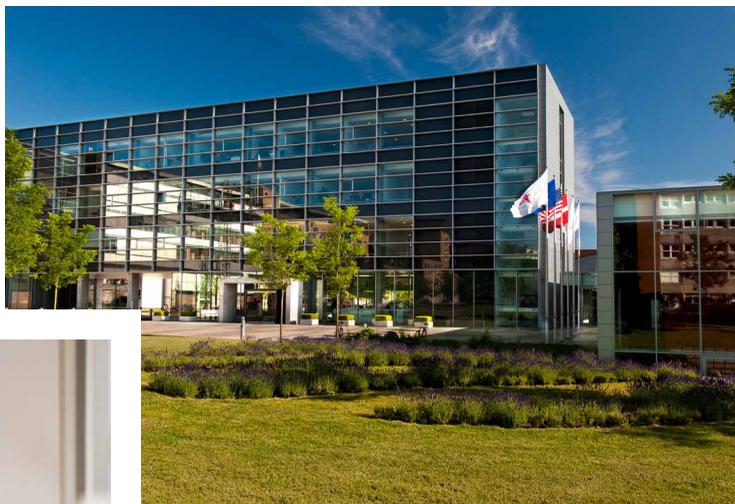


CIPRAMIL®

During the 1990s, the anti-depressant became Lundbeck's dominant product and is registered in over 70 countries.

LUNDBECK HEADQUARTERS

The company moved to Valby in 1939 in its quest for more production and administrative space. It has been the home of Lundbeck's HQ ever since.



5,300 EMPLOYEES ACROSS 55 COUNTRIES
Lundbeck has grown into a global company through strategic acquisitions and sales growth.



WE ARE LUNDBECK

We are a specialized pharmaceutical company engaged in developing new and innovative treatments for psychiatric and neurological disorders.

KEY DISEASE AREAS



DEPRESSION



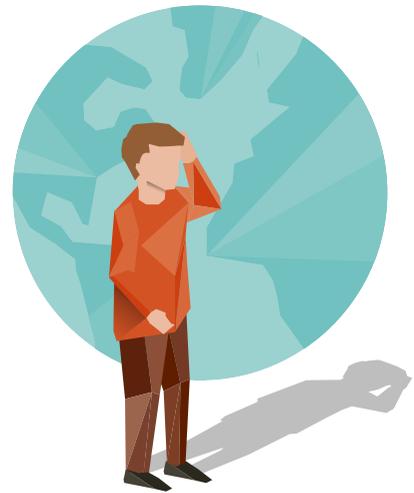
ALZHEIMER'S DISEASE



PARKINSON'S DISEASE



SCHIZOPHRENIA



VISION

We strive for global leadership in

psychiatry and
neurology

by improving the lives of patients.

OUR PRINCIPLES

We are **focused,**
passionate and
responsible

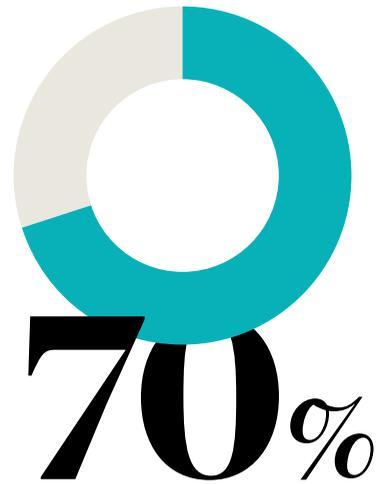
REVENUE

Our 2015 revenue reached DKK 14,594 million.



EMPLOYEES

We are approximately 5,300 employees.



OWNERSHIP

Our largest shareholder is the Lundbeck Foundation, which holds approximately 70% of the shares. The Foundation annually grants between DKK 400-500 million to support medical research and educational and communication activities.

GLOBAL PRESENCE

We are headquartered in Denmark and located in 55 countries.



HISTORY

Lundbeck was founded by Hans Lundbeck almost 100 years ago in 1915 in Copenhagen.



H. Lundbeck A/S

Ottoliavej 9
2500 Valby
Denmark

information@lundbeck.com
www.lundbeck.com
CVR number 56759913