Healthy Ageing
For this thematic paper we talked to:

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**Thematic papers**

The goal of the thematic papers is to present Flemish scientific research internationally. They focus on fundamental and applied research.

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When we think of healthy ageing, we often immediately make the link to our medical needs. This is quite logical, because as we grow older, our ability to recover from physical ailments decreases. Yet, the field of healthy ageing entails much more than that. Like any age group, the senior citizens among us have specific needs. Not just concerning health, but also in terms of society, culture, economics, intimacy, security, mobility, and so on.

Population ageing is becoming more prevalent in most parts of the world now. People often look at the phenomenon as a problem and wonder how the growing group of elderly people will be cared for and who will pay for it. However, as many researchers are working towards innovative solutions, population ageing should not be perceived as such a significant problem.

Healthy ageing in Flanders

The Flemish academic domain of healthy ageing is thriving, as Flanders, like many other regions in the world, is dealing with population ageing, which, according to predictions, will only intensify in the years to come. This booklet will look at the work of nine such researchers in the following four subdomains:

1. **Medical Care:** What are the specific medical needs of older people?

2. **Well-being and Intimacy:** How do relations with family, friends and partners influence the well-being of older people? What about their living arrangements?

3. **Social and Civic Engagement:** How can a senior citizen's social participation be optimised? Which elements inhibit civic engagement and how can they be overcome?

4. **Technology for Independence:** What technology can help elderly people in their ageing process?
MEDICAL CARE
As people grow older, they become more fragile and prone to ill health. This means academic research into medical care for the elderly is a necessity if we want to fulfil their needs and make life easier for them. One of the researchers working in this field is Nele Van Den Noortgate, professor of Geriatrics at Ghent University. The topics her department deals with are as important as they are diverse:

‘One of our research projects focuses on the experience older people have when a child of theirs gets cancer. The study is not finished yet, but we’ve already discovered that older parents of children with cancer often feel side-lined. They suffer in silence while they don’t know how to get involved. They don’t act on their feelings, because they don’t want to burden their sick children,’ explains Van Den Noortgate.

Another field of research her department is involved in concerns the specific needs of older people with regards to their end-of-life care. ‘Senior citizens who are in need of end-of-life care often suffer from chronic ailments. They don’t just suffer from one condition, but a complex set of syndromes that make them very fragile and can eventually lead to their death.’

Yet how come so many elderly people deteriorate once they are admitted to a hospital? Maertens sheds light upon the matter:

‘The criteria we use to diagnose the end of life among younger patients are very different from those among older ones,’ she concludes, ‘so we need a separate approach to end-of-life care for older patients.’

**Acute physical deterioration**

Bruno Maertens, head of Intensive and Emergency Care training at Artesis Plantijn University College Antwerp, examines acute physical deterioration among elderly people. ‘We noticed that a lot of care home residents rapidly deteriorate when they’re admitted to hospital. Once they’re there, they often don’t return to their residence anymore,’ Maertens explains. Sometimes elderly people are hospitalised for the feeblest of reasons. ‘I noticed this when I worked in A & E (Accident & Emergency);’ he elaborates. ‘Elderly people with only a minor fever, for instance, were brought in by their carers.’ This happens quite often during weekends or at night when there aren’t as many staff on duty as usual. ‘A carer responsible for 50 residents would rather admit one of the people they are taking care of to hospital than to contact the doctor in charge.’

Yet how come so many elderly people deteriorate once they are admitted to a hospital? Maertens’ research unit is developing a screening mechanism meant to detect physical deterioration at an early stage. ‘Each week, students take elderly people’s blood pressure, heart rate, respiratory rate and temperature among other things. Afterwards, we look at which residents became ill, needed special care, were hospitalised or whose condition deteriorated. This way, we can investigate which parameters are correlated with a patient’s deterioration, and ultimately we hope to achieve a “Geriatric Early Warning Mechanism”.’

Maertens’ research unit is an especially negative effect on elderly people, who have often become more fragile over the years. In addition to this, the chance of them getting an infection in a hospital is greater than in a care home. It would therefore be better if they were to remain in their care home as long as possible. ‘Not just for medical, but for financial reasons as well. After all, fewer hospitalisations mean lower costs for elderly patients themselves and the healthcare system as a whole. Of course, care homes would benefit from this financially as well.’
Getting older isn't easy. And it's especially difficult when you live in the South African countryside. Care@Com, a research collaboration between Artevelde University College Ghent and Stellenbosch University in South Africa, investigated the subject. Leen De Coninck, who is in charge of the project, travelled to the village of Obonjanei in the province of Kwazulunatal to carry out the research.

She quickly discovered Obonjanei’s population is very poor. ‘Many families are affected by AIDS which basically wiped out an entire generation, i.e. those who would have been approximately forty years old today,’ De Coninck explains. ‘Normally, this generation would be taking care of their elderly parents, but in fact it’s the grandchildren and great grandchildren who are looking after them now instead.’ And this arrangement is far from ideal as it hampers these young people’s school attendance.

The youngsters, though, have little choice as there is little or no care infrastructure for elderly people available. ‘There’s a local hospital with a few mobile
Being elderly in the South African countryside doesn’t have much in the way of nurses who do rounds once a month, but that’s it. For some, the hospital is a three-hour walk away on very bad roads. De Coninck believes older people’s lack of mobility, a direct effect of these bumpy roads, is the most pressing problem in Obonjanei: elderly people just can’t get out and about.

How could their care be improved? ‘We talked about establishing an old people’s home, but found out that wouldn’t be a good idea: firstly there isn’t enough money for something like that, but secondly and more importantly, it wouldn’t work because the culture is very family-oriented,’ continues De Coninck. ‘We decided that expanding on home care by creating a community service centre would be a better option. The professionals employed in such a centre would try to identify volunteer carers in the elderly person’s direct environment to complement the care provided by the service centre. This reliance on volunteer carers is truly ingrained in South-African society,’ concludes De Coninck.
Well-being and intimacy
Living a good life revolves around more than medical health alone; it is also about having good relationships with family and friends. Els Messelis, gerontologist at Odisee University College, concentrates on this broad topic. Two of her research projects have drawn attention towards the sexual experiences of older people and maltreatment, but she is also actively involved in techniques exploring elderly people’s life stories, for example through ceramics and other forms of art.

For her research into sexual experiences of people in care homes, Messelis sent out surveys to several such homes in Flanders. ‘We asked the staff of the care homes how they’re confronted with sexual experiences of residents and how they react to them,’ she explains. ‘It became clear that many care facilities don’t have a sex policy yet. The staff are in dire need of training. Sex or masturbation by elderly people is still a big taboo.’

Messelis created an instrument, ‘the sex trunk’ filled with all relevant material, like a documentary about sex among elderly people, to help with the training of carers. She explains the chief goal of the trunk is to break taboos and provide information, but the tool is also useful to get an insight into carers’ opinions on the topic.

Maltreatment of elderly people
Messelis’ research project on the maltreatment of elderly women within families revealed that one out of three elderly women were abused. ‘This topic has touched me immensely,’ Messelis says. ‘Because it received quite some media attention, a few women who were maltreated, contacted me to tell their story.’ Messelis recalls one woman whose children denied her to see her grandchildren. ‘That’s also a form of maltreatment,’ she says.

The research, which was funded by the European Commission and the Austrian Red Cross and later picked up by the World Health Organization, resulted in a training manual for health and social services staff, explaining how carers can recognise maltreatment, what the risks are and how they should deal with it. ‘The challenge now is to circulate the handbook as much as possible,’ Messelis says. This is necessary as maltreatment is so widespread and carers don’t really know how to deal with it.

Elderly people are often at the receiving end of maltreatment, but it can also be the other way around. From time to time, carers are faced with aggression from the older people they are caring for. Jessie Schrijvers, co-ordinator of the research group Active Ageing at University College Leuven-Limburg (UCLL), is working on this issue: ‘We have just started developing a tool box to teach carers how to respond to aggression from elderly people. We have to look at what triggers it, how carers should react to it and how current policy should change.’

Innovative living arrangements
A second issue Schrijvers’ research group is working on concerns innovative living arrangements. An increasing number of old people would like to stay at home for as long as they can. ‘Everyone wants to grow old in their own neighbourhood and home,’ says Schrijvers.

Last year, one Flemish council, Neerpelt, asked the department to start up a project as the town had some space available for new residences. ‘For a year and a half, we guided 5 co-creation sessions where people with different backgrounds – young and old, healthy and ill, carers, patients and more – came together to discuss the purpose and outline of the concept,’ explains Schrijvers. ‘Each session focused on one particular issue, for example how to interact with the neighbourhood or how to set up care networks.’

After those 18 months, the concept was finished and the main characteristics of the future care facility are its connectivity with the neighbourhood, its multi-functionality and its intergenerational connection.
Social and Civic Engagement
A crucial part of healthy ageing is social participation, being part of society, for example by going to the library, attending the city council or frequenting local events. Unfortunately, though, social participation often decreases as people grow older, as health problems inhibit their mobility and resilience.

**Art and dementia**

Since social participation has a huge influence on people's lives and wellbeing, it is no surprise that researchers have been focusing on this subject. Sebastiaan Engelborghs, for example, professor of Neurosciences and Neurochemistry at the University of Antwerp, is the academic brain behind *Meet Me @ M HKA*, an art exhibition for people with early-stage dementia. As part of a programme inspired by a similar one in the Museum of Modern Art (MoMA) in New York, the Museum of Contemporary Art in Antwerp, the M HKA, currently gives small groups of dementia patients and their volunteer carers a tour of an exhibition with approximately five pieces of art.

‘The tour guides receive some training from our department, mainly about how to deal with symptoms of dementia,’ says Engelborghs. ‘The tour is based on interactive conversation techniques, which enable our guides to involve the patients in the conversation about the pieces. Contemporary art is perfect for this, because people don't need to rely on their memory to appreciate it. Any opinion you might have about this type of art is neither right nor wrong. People appreciate a piece of contemporary art according to the emotions it evokes.’ Art is not just a vehicle for emotions, explains Engelborghs, but also for memories. Patients with early dementia, whose memories are slipping away, can suddenly remember certain moments in their lives, just by the emotions a piece of art provokes.

The art programme also proves beneficial to the relationship between patients and volunteer carers. They have told Engelborghs that *Meet me @ M HKA* made them feel like their patient's partner, brother or sister again, instead of a mere carer. But the most important effect of the art programme, according to Engelborghs, has to do with social participation. ‘People with early dementia tend to isolate, to seclude themselves from the outside world. Activities like these bring them back into society. The exhibitions change from time to time – the museum doesn't have a permanent collection, so its exhibitions are only temporary – but we always try to link the exhibition with a socially relevant theme. Politics, for example, or leisure. Discussing topics like these helps (re-)integrate patients into society.’

**Driving skills**

Age is just a number. It can't determine whether you can drive safely or not. This is one of the preliminary results of a research project by Hasselt University involving An Neven. 'On the one
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In collaboration with Mark Lutin, geriatrist at Jessa Hospital in Hasselt, the research team subjected a group of old-age pensioners to two driving tests and a number of physical, visual and cognitive tests. ‘The first driving test was in a simulator in our Transportation Research Institute, Neven elaborates, ‘the second one was on the road with an evaluator of CARA, a division of the Belgian Road Safety Institute.’

‘Some people had problems with their eyesight,’ continues Neven, ‘while others had concentration issues, couldn’t make fast decisions or weren’t dynamic enough to drive safely. Yet, we found that age wasn’t a good indicator for the capacity to drive. It rather depends on different functional abilities.’

If elderly people can’t drive anymore, there are several alternatives. Public transport is one of them, but there are also a few other ways of getting around specifically created for people with mobility problems. Adjusted taxi services, for instance, subsidised by the Flemish Government. Flanders’ elderly can search for different methods of accessible transport through MeerMobiel, an online platform Neven’s department helped to create.
Liesbeth De Donder, professor of Adult Educational Sciences at Belgian Ageing Studies, a research group at Free University Brussels (VUB), has written her PhD on the fear of victimisation among older people. A survey conducted in 180 Flemish municipalities showed half of seniors felt unsafe. ‘Some older people don’t go out anymore, just because they’re afraid,’ De Donder says. ‘But there’s a paradox: although older people are more afraid than other sectors of the population, they are less likely to become the victim of crime. Older people are the safest, yet the most fearful of all age groups. We call this contradiction the “Fear of victimisation paradox”.

Why, then, do older people feel so unsafe? ‘There are several reasons for this,’ says De Donder. ‘One of them has to do with vulnerability: if an older person feels vulnerable, physically or socioeconomically, they don’t feel safe. The neighbourhood we live in plays an important part in this. People might think a run-down neighbourhood makes older people feel unsafe, especially if there is a lot of graffiti, but the age-friendliness of our towns and cities is more important than dilapidation. For example, an age-friendly town has accessible pavements and traffic lights that stay on long enough for older people to cross the road. The less age-friendly a town is, the less safe older people feel. Finally, social networks are a significant factor. It’s not the quantity of social relations, but the quality that counts most. Elderly people’s relationships with their neighbours are especially important.’

What are they afraid of?
TECHNOLOGY FOR INDEPENDENCE
The age of technology has impacted on many research domains and the field of healthy ageing is no exception. Take the research group Active Ageing of University College Leuven-Limburg (UCLL), for example. The group is currently developing mHealth, a platform application for dementia patients and their carers. ‘It’s part of the European Horizon 2020 framework programme for research and innovation,’ says Jessie Schrijvers, co-ordinator at Active Ageing. ‘The goal is to improve dementia patients’ medical adherence and quality of life.’

The mHealth platform is being developed for tablet and will include very simple things like music, a newspaper, a few cognitive games, a notebook and a diary to keep track of how much physical exercise users do and the medication they need to take. Patients could then bring their tablet to their specialist consultant or doctor to go over their diary and notes.

For now, the application is directed at patients with mild dementia, but the European consortium is also examining how long patients can keep using it while their illness progresses. ‘We could perhaps make some adjustments to create a second version, so patients can use it for as long as possible,’ continues Schrijvers.

The application is currently being tested in Belgium, Spain, Sweden and the UK. If the testing phase is successful, it can be made available in other countries as well.

Malnutrition
Gert Mertes, PhD student at the University of Leuven’s Department of Electrical Engineering, supervised by Bart Vanrumste, Hans Hallez and Tom Croonenborghs, is working toward an automated way to detect malnutrition. His project is called DISH, short for ‘Devices for food Intake using Smart devices in Healthcare’. DISH focuses on elderly people who are living alone but depend on volunteer carers for basic care. They often don’t eat regularly, because they simply don’t feel like having a meal all by themselves. When the social element of eating disappears, for example when a partner passes away, many elderly people just don’t bother to have a proper meal.

Malnutrition frequently goes undetected. ‘Volunteer carers don’t always have time to concern themselves with eating patterns,’ Mertes explains. ‘When an elderly person loses a lot of weight in a short period of time, it’s pretty obvious, but often malnutrition is more subtle. In this case, an automated system can help.’

The DISH-research team has come up with a twofold solution. First, motion sensors could be attached to certain objects on the elderly person’s body, like their glasses. ‘These sensors will detect when the person is chewing food, because their head will be making small movements,’ Mertes says.

While these motion sensors will detect when someone is eating, there should be a second system to detect how much a person is eating. Mertes and his supervisors thought of incorporating weight sensors either on the elderly person’s plate or placemat. ‘Using such sensors, we can measure how much food is leaving the person’s plate. Of course, we need to know how much was on it in the first place, perhaps by cooperating with home cuisine services.’
DISH is part of a project called ‘Engineers in the care home’, in collaboration with Innovage, a company that focuses on technology for elderly care, care home Edouard Remy in Leuven, and the Public Centre for Social Welfare in Leuven. Since January 2015, Mertes and two fellow engineers have been working together with the residents and carers of Edouard Remy towards the advancement of care technology. ‘The interaction with care professionals and care dependents is crucial,’ Mertes says, ‘because we need to make sure the technology we are developing is tailored towards the needs of both the health care professionals and the elderly.’

Embedded within VIVES University College, research group Cretecs (Creating Technological Solutions) advises care organisations and companies in the domain of care technology. Starting from a social service, they aim to inform, spread and develop practical applicable knowledge regarding the use of care technological solutions, while focusing on healthcare organisations, businesses and governments. They do this by mapping the needs of all actors involved in the care process. ‘This way, it is possible to tailor the technology on offer,’ says Bart Degryse, advisor at Cretecs.

In their approach, the end users are always a priority. They can guarantee this by being neutral and independent towards technology providers and commercial parties. They work on a multidisciplinary level and formulate their advice based on technological expertise and care content. Their team follows the latest developments in care technology and maintains close contact with experts, stakeholders and researchers.

One of the projects, the STAFF (Slimme Technologie als alternatief voor Fysieke Fixatie or Smart Technology as an Alternative for Physical Restraint) project, which is being carried out in co-operation with the University of Leuven (LUCAS), aims to emphasise smart technology as a possible alternative to physical restraint. The project aims to gather practical information to help healthcare institutions and businesses. Important parts of the study are a survey with questionnaire and an intervention study. The goal of the project is:
• Mapping the current use of physical restraint and smart technology in Flanders;
• Evaluating the experiences of residents and care staff with smart technology;
• Formulating ‘tips and tricks’ for businesses and residential care centres in the implementation of smart technology.

‘At the moment, we’re testing these bed-exit alarm systems in nine different care facilities in Flanders,’ says Bart Degryse. In these care facilities, state-of-the-art technologies are being implemented: PIR-sensors, piezoelectrical sensor, optical camera, wireless floor mat, optical fibre sensor …

**Long-term care technologies lag behind**

In another project, Cretecs is examining the gap between the development of medical technologies and those utilised in long-term care. ‘Medical technologies develop quickly while other technologies in the care sector are sometimes lagging behind,’ notes Bart Degryse.

So Cretecs wants to identify the cause of this gap. Does it have something to do with the way healthcare is organised? Are there, for instance, cultural elements involved, or factors that are specific to the various care sectors? Is the acceptance of technology in long-term care not as high as in the medical world? Is there a lack of training among professional caregivers?

With its research-based expertise and advice, Cretecs wants to contribute to (more) sustainable and qualitative care.
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