MEDTECH RADAR

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Health care of the future

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A cooperation of

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DIGITAL FUTURE

The potential of artificial intelligence

To date in medical technology, artificial intelligence has been used primarily in radiology, diagnostic applications and operating theatres. But what other benefits does it offer?

The future of diagnostics should be fast, precise and reliable. Therefore, imaging methods are relying on artificial intelligence (AI) even today. "Intelligent algorithms improve accuracy, speed and automation," says Michael Graß, Principal Scientist at Philips Research in Hamburg. The Dutch medical device manufacturer has a research unit in digital imaging here, with AI playing an increasingly important role. Of the 1.7 billion euros that the group spends annually on research and development, 60% alone is allocated to software and data science.

At the latest Congress of Radiology in Leipzig, for instance, Graß presented an AI-based detection technology that tunes the magnetic resonance imaging (MRI) scan to the patient's respiratory cycle. Start-ups such as mediaire GmbH, which was founded in February 2018, also rely on an AI-based analysis of MRI images – relevant for patients with Alzheimer's or Multiple Sclerosis. At the first "Medtech Radar Live Pitch Day" event in May of this year, mediaire founder Andreas Lemke presented his approach: "With our AI system, the brain volume is automatically measured after recording in the MRI scanner and automatically made available to the radiologist as a report on the quantitative evaluation of the brain segments. Thanks to the AI, the radiologist receives the diagnosis, i.e. the degree of Alzheimer's or Multiple Sclerosis the patient has, less than ten minutes later."

New ideas beyond radiology

AI-based developments in radiology are currently the "hottest use case in medical technology," says Fabian Mohr, investment manager at High-Tech Gründerfonds (HTGF). "Fast and reliable diagnostic work is a real bottleneck in the hospital, because the MRI devices are running almost all day long,

Abb.: AopQlar GmbH

but there are not enough radiologists for evaluation." Many start-ups are now also tackling issues beyond the field of radiology: At ApoQlar GmbH – located in the Philips "Health Innovation Port" incubator in Hamburg – CT and MRI images are combined with mixed reality technology and AI. With this "Virtual Surgery Intelligence", surgeons can more easily detect pathologies and fractures. Other young companies want to simplify cancer diagnostics with AI. Magnosco GmbH, a spin-off of the medium-sized company LTB Lasertechnik Berlin, focuses on non-invasive early detection of skin cancer using AI-based dermatofluoroscopy. Oaklabs GmbH from Potsdam shows that AI is also useful in molecular diagnostics – for example to better stratify patients for clinical studies with biomarkers. HTGF investor Mohr believes that personalised medicine is ideal for AI applications in view of the potentially combinable imaging, genomics and metabolomics data: "The smart integration of AI into everyday clinical practice will be a challenge, however." For medical technology companies such as B. Braun, AI is above all an important basic technology. "In the future, AI and machine learning will always be part of our accelerator programmes, whether it is robots for customer dialogue or our own internal work," says Alexander Katzung, Vice President Acceleration and Innovation at B. Braun.

Personalised healthcare

Bodylabs GmbH from Munich goes one step further than traditional medical technology. Its focus is on workplace health promotion. "We want to show employers and health insurance companies which prevention programmes work and which don't," says co-founder Sebastian Dünnebeil. Bodylabs has developed a mini-laboratory for this purpose, which enables uncomplicated check-ups of all employees on site at the employer's premises. "With a questionnaire and sensors, we can digitally record a total of 60 vital parameters in 15 minutes," explains Dünnebeil. Among other things, capillary blood analysis, cardiovascular screening, body composition analysis, lung screening and a movement test are performed. "The data obtained in this way is fed into an app in real time via the software," says computer scientist Dünnebeil. The software, a Class I medical device, uses the data to create a personalised prevention package consisting of guideline-based recommendations, prevention measures of the respective employer and – if required – those of the cooperating health insurance company. Dünnebeil eyplains further: "The testers can then individually tailor this offer by video consultation with one of our physicians." At the same time, the employer receives a report summarising the anonymous health data on a group basis of the employees and giving recommendations for prevention programmes. "If the data series are repeated annually, the system can learn with AI and analyse which prevention offers are well-received and what their long-term effects are," says Dünnebeil. Initial test series with companies such as Allianz and cooperations with health insurance companies such as BARMER have already been successfully completed. Now the company has also attracted investors. Established in 2016 as a spin-off of the Technical University of Munich, the team was initially part of the Allianz Insurance Accelerator. As of summer 2018, the start-up has been independent and financed by Earlybird Venture Capital, Plug and Play and Paua Ventures. At "MedTech Radar Live 2019", the team will present its check-up laboratory live.

> "Our system can learn with AI and analyse which prevention offers are well-received and what their long-term effects are."

MedTech Radar at MEDICA 2018

medtech zwo:
Booth F42, Hall 15

Germany Trade & Invest:
Booth F37, Hall 15

START-UP FOCUS

Measuring hand hygiene with sensors

At the "MedTech Radar Live 2018" event, the start-up GWA Hygiene was one of the ten selected pitch candidates. In the meantime, the founders have convinced investors with their sensor-based hand hygiene monitoring and found a strong industrial partner in B. Braun.

Co-founder of GWA Hygiene Mark Gronau came up with the idea for the NosoEx system when he was in hospital himself. From his bed, he observed how often the hospital staff disinfected their hands. His conclusion: the germ-reducing agents are available in sufficient quantities, but the discipline to use them regularly is not always there. Gronau: "In Germany alone, up to 700,000 people are infected with hospital germs every year. Hands are the number one transmission route".

In order to gain an overview of this routine process in health care facilities, Gronau and four friends founded GWA Hygiene GmbH in 2015. Together, they developed a sensor system that is attached to existing disinfectant dispensers and records when and how often they are operated. At the same time, employees are equipped with transponders that communicate with the dispensers. "In this way, self-programmed software can create overviews of where training is required or when the dispenser needs to be refilled," says Gronau. In order to earn money, GWA wants to charge a monthly fee to health care institutions for the IoT solution – including the hardware developed in-house.

Significant market potential for smart idea

Since its market launch in 2017, 15 facilities throughout Germany, including hospitals and nursing homes, have been equipped with NosoEx. Now the founders plan to broaden the basis for the distribution of hand hygiene monitoring – and for this purpose they sought investors at the beginning of the year. In May, the start-up was among the ten selected candidates who were invited to appear before investors at the "MedTech Radar Live" event. One of the partners, High-Tech Gründerfonds (HTGF), was convinced enough to support the company. Together with the venture capitalist MIG Verwaltungs AG and two business angels from Mecklenburg-Vorpommern, they invested 2.5 million euros. "The market potential of the GWA solution is significant. In Germany alone, there are 664,000 hospital beds and over 900,000 nursing care places where it is important to prevent the transmission of germs," says Jürgen Kosch, General Partner of MIG AG. Anke Caßing, Investment Manager at HTGF, emphasises: "Only products that can be easily integrated into existing systems and processes can lead to improved hygiene".

Cooperation with industrial partners

Within the next year, GWA wants to be the market leader in Germany in the field of hand hygiene monitoring. This will also depend on cooperation with established industrial partners such as B. Braun, who want to develop the system into a comprehensive platform (see interview).

MedTech Radar Live 2019
5th June 2019, Berlin

Once again BARMER, Earlybird Venture Capital, BVMed, HTGF and medtech zwo will organise the event „MedTech Radar Live". Featuring an extended programme, start-up pitches and exhibition: www.medtech-radar.live

MEDTECH RADAR | Mr. Ottiger, why are smart disinfectant dispensers increasingly growing in importance these days?

Yves Ottiger | Reporting on the compliance of hand disinfection is based on procurement figures. However, the purchases do not always correspond to the consumption. Smart dispensers simply offer a better database because the consumption is precisely documented. Above all, it is important for us to take the pressure off those responsible for hygiene so that they can concentrate fully on implementing hygiene measures. The desire and need for smart systems is nothing new, but a fast and cost-efficient implementation from the customers' point of view has so far been lacking.

MEDTECH RADAR | How did the idea of GWA Hygiene and the NosoEx system convince you?

Yves Ottiger | With its NosoEx product, the start-up company offers an easy-to-implement and cost-efficient way of evaluating the consumption of hand disinfectants. This can help to tackle the fight against transmissible germs and potential infections effectively and in a targeted manner. We at B. Braun can then use special sensors to make the dispensers 'smart'. In this way, it can be shown where disinfectant consumption is too low compared to patient days. In addition, it was crucial for us that the people responsible for hygiene receive data in a visually appealing way. What convinced us above all was the simplicity of the technical solution. This is an essential aspect for rapid market penetration.

MEDTECH RADAR | How critical was the market potential for your cooperation with the start-up company?

Yves Ottiger | The GWA hit the bull's eye in this respect. The market potential corresponds to the number of beds times two. For Germany that would be 1 million dispensers in hospitals alone. In addition, there are many countries in which no or only a few dispenser systems are used, but where the awareness of technologically advanced systems is very high. This is where we believe we can work the market much more efficiently in cooperation with GWA and directly pass over a development step – that of simple dispenser systems – and offer smart, affordable solutions.

Yves Ottiger
Vice President Global Marketing & Sales, Out Patient Market (OPM), B. Braun

B. Braun AG, headquartered in the North Hesse town of Melsungen, is one of the leading medium-sized medical technology manufacturers in Germany. The product range comprises a total of 5,000 products, 95% of which are manufactured in-house. Yves Ottiger is Vice President Global Marketing and Sales.

MEDTECH RADAR | How do start-ups benefit from working with B. Braun?

Yves Ottiger | In the case of the GWA, the NosoEx system is now an integral part of our range of services. This allows us to strongly support the start-up company, especially in its internationalisation. Our Infection Prevention department also incorporates other processes and products that provide synergistic data for NosoEx. If various data sources are integrated, the system can become a comprehensive platform to counteract infections in hospitals and nursing homes. We want to help with that.

Abb.: B.Braun Medical Ltd.

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High-Tech Gründerfonds

The High-Tech Gründerfonds, an initiative of the Federal Ministry for Economic Affairs and Energy, the KfW and 32 companies, supports young technology companies with seed financing to advance research projects at least until a prototype status or until market entry.

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BVMed Gesundheit gestalten

The German Medical Technology Association (BVMed) is an industry association that represents over 230 industrial and commercial companies in the medical technology sector. Among its members are 20 of the largest medical device manufacturers worldwide in the field of consumer goods.

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GTAI GERMANY TRADE & INVEST

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BIOCOM medtech zwo

As an information specialist, BIOCOM AG has supported the life sciences for more than 30 years. The magazine medtech zwo reports on the medical industry in Germany, Austria and Switzerland.

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EARLYBIRD

Following a seed financing round, venture capitalists such as Earlybird Venture Capital helps companies to grow ready for the market and above as well as to scale up on an international level.

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