

# The **ANGELS** Journey



100 REGIONS | DECEMBER 2027



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Do something!

Scroll down  
to keep reading



02

**UNITED FRONT  
AGAINST STROKE**  
Q&A with ESO President  
Simona Sacco



03

**IN A CLASS  
OF THEIR OWN**  
FAST Heroes  
implementation  
in Slovakia



10

**THE ITALIAN JOB**  
How MonitorISA impacts  
stroke in Italy



100 REGIONS | DECEMBER 2027

## Do something (together)



At this year's **European Stroke Organisation Congress**, we want to challenge the European Angels community to stand up and

# do something.

Millions of lives are lost every year because stroke care is broken. Broken for reasons so numerous and complex that at most hospitals doctors have no idea how to fix it. Overwhelmed by the complexity, they experience decision paralysis and, in the end, revert to long established habits and routines. This outcome is devastating to stroke patients because the old habits and routines often deny them the standard of care they deserve.

In these conditions it is easy to point fingers and blame the failures of government, paramedics and sometimes even the patients themselves, all the while waiting for someone else to do something.

This always brings to mind the lyrics of one of my favourite songs. "Do Something" by Matthew West was inspired by a college student who during a semester abroad happened upon an orphanage where children were abused and neglected. Letting her parents know that she wasn't coming home, she devoted herself to creating a haven where over 100 children now learn and thrive.

#### This is how it starts:

*I woke up this morning*

*Saw a world full of trouble now,  
thought*

*How'd we ever get so far down, and*

*How's it ever gonna turn around*

*So I turned my eyes to Heaven*

*I thought, "God, why don't You do something?"*

*Well, I just couldn't bear the thought of*

*People living in poverty*

*Children sold into slavery*

*The thought disgusted me*

*So, I shook my fist at Heaven*

*Said, "God, why don't You do something?"*

*He said, "I did, I created you."*

The song contains an amazing message, one that inspires me every day to do whatever it takes to give life a chance. It also inspired this issue of the Angels Journey.

On every one of its pages, you will meet people who heeded the call to do something – from the doctor in Bulgaria who saw her mentor slip away after a stroke and who later stepped into his shoes to ensure others had access to treatment, to

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**The ones who are crazy enough to think they can change the world, are the ones that do.**

”

the teachers who implement FAST Heroes in their schools. From the doctor in Brazil who did all he could to secure a giant honour for his small town, to the paramedics in a distant corner of Poland who ensured all their colleagues were equipped with the knowledge to save lives.

They move and inspire us, and they will do the same for you.

Doing something can mean taking a critical look at your hospital's patient pathway or taking part in the global Angels Insights months in March and September by capturing data in SITS or RES-Q and making data-driven improvements.

Doing something could also mean reaching out to schools in your region and convincing the teachers to help you take up arms in the fight against stroke. It could mean taking the time to learn the name of your EMS colleagues and to thank them for delivering a stroke patient to the correct hospital.

# The Angels Initiative

The Angels Initiative is a healthcare intervention dedicated to improving stroke patients' chances of survival and a disability-free life. Since 2016, an estimated **16 million patients have been treated in over 8,000 Angels hospitals worldwide, including more than 1,400 new stroke-ready hospitals established across the world with the help of Angels.**

Find out more by visiting [angels-initiative.com](http://angels-initiative.com)

What our experience of the past nine years have taught us – and what we continue to learn from stories like the ones told in this magazine, is that our impact is multiplied when we do something together. That is the principle underlying ESO/WSO Angels Regions – our campaign to create 100 regions around the world where stroke communities set communal goals and achieve them together.

Perhaps your region will be the first in Europe to become an Angels Region, or the first in your country. What matters is that by working together as a regional stroke team towards a shared goal, teachers, government authorities, EMS, and hospital stroke teams can all help us make the world safe for stroke.

Like Steve Jobs said, “The ones who are crazy enough to think they can change the world, are the ones that do.”

If you've always wanted to star in a music video, join us for some fun at the Angels booth in the exhibition area. We are looking for people who want to stand up and do something and we will give them the opportunity to make that commitment public.

You were created for a reason, so what are you waiting for – do something.



Jan van der Merwe  
Co-Founder & Project Lead –  
The Angels Initiative

## Inside this issue

### 100 REGIONS

- 1 **BRAZIL**  
Angels cities | Safe cities for stroke

### EUROPE

- 2 **EUROPE**  
ESO | A united front against stroke

### AWARENESS

- 3 **SLOVAKIA**  
In a class of their own

### EMS

- 4 **POLAND**  
A tale of two stickers
- 5 **SPAIN**  
Summa 112 | Measured in minutes
- 6 **POLAND**  
Team is brain

### HOSPITALS

- 7 **CROATIA**  
Call to action in Croatia
- 8 **NORTH MACEDONIA**  
A dream finds a team
- 9 **BULGARIA**  
Proud moments in Stara Zagora

### QUALITY MONITORING

- 10 **ITALY**  
How MonitorISA changed the game

### 100 REGIONS

- 11 **CZECH REPUBLIC**  
South Bohemia | Becoming an Angels Region
- 12 **SPAIN**  
Getting ahead by getting started
- 13 **BRAZIL**  
Sapucaia do Sul | It takes a city

### EXPERIENCE

- 14 **INDONESIA**  
A consultant's story | Water wears away stone
- 15 **COLOMBIA**  
Crossing borders in South America



# Angels cities

## Safe cities for stroke

In Brazil, Angels team leader Kamila Fachola implements a concept called Angels Cities, which lays the foundation for a new strategic approach.

RIBEIRÃO PRETO is a medium-sized city located in São Paulo state, Brazil, a four-hour car ride inland of the state capital. It is home to one of the oldest samba schools in Brazil, the third-largest opera house, one of the oldest and most important symphony orchestras, and one of its most beautiful university campuses. Around 700,000 people enjoy living in this vibrant town with its thriving economy and lively bar culture – the result of warm tropical evenings tempting people out of doors.

Ribeirão Preto is also Brazil's first and until recently its only Angels City, a distinction it gained on World Stroke Day 2023 when it was officially named a safe city for stroke. There are now two Angels Cities in Brazil and by the time you read this, there'll be three or perhaps more, as Angels team leader Kamila Fachola rolls out the strategy that will some day be part of her legacy.

The concept for Angels Cities arose out of the realisation that the stroke patient's journey begins and ends in the community, not in the ambulance or in the emergency ward. For stroke patients to have the best outcomes, their city or region has to optimise delivery at every stage of the journey. This means: an informed public able to recognise the symptoms of stroke, emergency transport to the right hospital, acute treatment that meets the highest standard, and finally, a discharge system that supports the patient's reintegration into the community.

Such an end-to-end transformation would require a tailor-made strategy, Kamila realised. "We'd been working with hospitals to improve their stroke care, talking to the EMS, talking to teachers about the FAST Heroes awareness campaign ... But we did all these things separately; they didn't work together. So in one region you might have an awareness campaign but an underperforming hospital – or an amazing hospital but the EMS wasn't good. It didn't make sense to approach them as separate projects. We needed to implement all our projects simultaneously and transform the entire pathway to really change the reality for the population."

### Choose the right city

If you were to ask Kamila for pointers on how to build an Angels City, she would give you three pieces of advice, the first of which would be to choose the right city. "Start with the good cities," she says. Working with a city that already meets at least some of the criteria to become an Angels City, "shrinks the change" – a tactic borrowed from the Switch theory of change that motivates people to take action by showing them the finish line is closer than they thought.

That is the reason she chose Ribeirão Preto for her pilot project – a city whose stroke referral hospital, Hospital das Clínicas de Ribeirão Preto, already had



The Angels City celebration on World Stroke Day.

Samu Ribeirão Preto celebrate their diamond award.

two gold awards. Its EMS service, Samu Ribeirão Preto, was also very good, although to meet Kamila's minimum criteria for Angels Cities, they would have to pick up an EMS Angels gold award. Awareness would be measured by the rate of implementation of FAST Heroes in the city's elementary schools. Progress in respect of rehabilitation would be harder to quantify, but Ribeirão Preto already had a large facility where stroke survivors could access therapeutic services, so Kamila ticked that box.

## Start the clock

Besides getting Samu Ribeirão Preto to gold status in the EMS Angels Awards, Angels Cities criteria required the implementation of the FAST Heroes awareness campaign throughout the city's public school system. The mayor again rose to the occasion – he didn't just make FAST Heroes implementation mandatory in public elementary schools, but signed an order that would bind his political successors to this commitment.

The celebration on World Stroke Day was a big one, bringing honour to everyone who had helped Ribeirão Preto become an Angels City. But the real meaning of being a safe city for stroke revealed itself one week later, when a small child dialed 192.

"I am here with my grandma," the little girl told the operator. "I think a clot is attacking my grandma."

Thanks to her little FAST hero, the patient was quickly transported to the hospital where she was immediately attended by the very same neurologist who had played such a key role in the Angels Cities project. After treatment with thrombolysis and mechanical thrombectomy, grandma was good as new, ready to be discharged into a community that was prepared to support her recovery.

## All for one

The power of the Angels Cities project is that it sets one goal to be achieved by everyone, Kamila says. "If one doesn't do it, then no-one can do it."

The second city in Brazil to officially become an Angels City was Sapucaia do Sul, a small city in the state of Rio Grande do Sul with just 200,000 inhabitants and a single hospital that already ticked every box. Next on Kamila's list was Curitiba, capital of Paraná state in southern Brazil, where two out of five stroke referral hospitals already held gold status.

Curitiba has been recognised for sustainable urban development; it has a low crime rate, is a drawcard for investors, and has been named (by Reader's Digest) as the best "Brazilian Big City" in which to live. Once it becomes an Angels City, its 2 million inhabitants will have even more to be proud of.

Kamila is already thinking about how to convert an even bigger city like São Paulo which, with over 12 million inhabitants, is the most populous city outside Asia.

"It must be possible to change big cities," Kamila muses. One city at a time – that's how you create a safe planet for stroke.

[Read about the conversion of Sapucaia do Sul on page 34.](#)



Samu Ribeirão Preto explain how they went from good to diamond.

## Mobilise the politicians

Ribeirão Preto was the right city for another reason – it had a mayor who understood both the challenges and the opportunities and who was excited about becoming the political head of an Angels City. When he heard that stroke and not heart disease was the biggest killer in the region, he agreed that change was necessary and urgent.

"There has to be a political force to make this happen," is Kamila's second piece of advice. Elected politicians are easily persuaded by the prospect of leaving a legacy; and achieving recognition ahead of other cities and regions is a winning look that plays well during municipal elections.

Ribeirão Preto had set itself an ambitious goal: to reach Angels City status within four months. Fixing a deadline is Kamila's third piece of advice, and the city had chosen an auspicious one – the ceremony marking them as a safe city for stroke would take place on World Stroke Day, 29 October. Before then the EMS would have to collate and report their Q3 stroke patient data, and the FAST Heroes campaign had to be rolled out to 4,000 children in 41 schools.

It meant a tight schedule for everyone including Kamila who had pledged her support at every step of the way and now found herself traveling to Ribeirão Preto every week.

## A safe city for stroke

No-one was surprised when October brought the news that Samu Ribeirão Preto had won not a gold but a diamond award.

“

If one **doesn't do it**, then no-one **can do it**.

”

Aided by a well-connected neurologist at Hospital das Clínicas de Ribeirão Preto, a meeting was arranged with stakeholders including the directors of hospitals and the EMS, where the importance of having an integrated system – and being recognised for it – was agreed.



Kamila Fachola



# ESO

## A united front against stroke

**Professor Simona Sacco, whose presidency of the European Stroke Organisation commences in May 2024, answers questions about her goals for the ESO, how stroke has touched her life, and the patient she can't forget.**

**Please tell us how and where you grew up, and how your family life and early education shaped your career decisions, lifestyle and personal values.**

I grew up in the nice countryside of central Italy, far from the chaos of a big city. It was a place where family ties were paramount. I had the opportunity to have from my childhood a deep connection to nature and was taught to enjoy simple things. My father was a general physician and my mother a teacher. My childhood was deeply influenced by the stories of my grandparents, who endured the hardships of World War II, witnessing the devastation of our city firsthand. These early experiences instilled in me the value of resilience and the importance of cherishing every moment. I am also full of a deep sense of recognition and appreciation for what life brought to me.

**Has your life been touched by stroke?**

Stroke has had a profound impact on my family life. When I was in my early twenties, just starting my journey in medicine, my grandmother suffered a subarachnoid hemorrhage, which tragically took her life. Her sudden passing left me devastated and grieving. But stroke had already made its mark on my family. Before my grandmother's passing, my father experienced an intracerebral hemorrhage due to his untreated high blood pressure. Despite the severity of his condition, he made a remarkable recovery. These personal experiences

ignited my passion for stroke research and advocacy. They inspired me to dedicate my career to advancing our understanding of stroke prevention, treatment, and rehabilitation. My goal is to spare other families from the pain and loss that mine has endured.

**Could you please share an anecdote about a patient or case that left a lasting impression?**

One patient's story that really sticks with me is that of a young woman who had recently become a mother to a baby girl. It was supposed to be a beautiful day, enjoying the sunshine and snow in the mountains around l'Aquila. But tragedy struck. She had a stroke while holding her newborn in her arms. The stroke, caused by carotid dissection, not only left her severely disabled in her movements but also changed her personality and behavior. The stark difference between the joy of motherhood and the devastation of stroke in that moment really hit me hard. Seeing the sudden and deep impact of stroke on this lively young mother and her family filled me with profound sadness. It was a powerful reminder of how stroke can completely upend lives in an instant, no matter the age or circumstances.

**Who and what inspires you? Have there been mentors in your career, and how does being a mentor yourself enrich your own experience?**

For me, inspiration comes from believing in the potential for self-improvement and for making a



positive difference in my workplace and in the lives of co-workers, students, fellows, and patients, step by step. I've learned that growth and change take time, patience, and persistence. It's a journey of building and embracing opportunities, of ups and downs, marked by victories and setbacks. Persistence and determination make the real difference.

Throughout my career, I've been fortunate to have mentors who have played crucial roles in my professional development. Professor Antonio Carolei was my formal mentor in stroke, teaching me the importance of precision, excellence, and perseverance. He introduced me to the field and shared invaluable knowledge with me. I've been fortunate to meet exceptional individuals in my career, each with their own values and strengths. I observe and learn from them, incorporating qualities I admire into my own approach. This journey of self-improvement is ongoing, and I greatly value the opportunity to work in an international context where I can meet leaders in science.

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By expanding this initiative's reach and fostering greater participation, **we can create a united front against stroke**, driving positive change and improving patient outcomes.

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Mentoring is a privilege that I deeply appreciate. I find fulfillment in guiding and supporting young colleagues in their professional growth. Effective mentoring involves more than just sharing knowledge; it requires understanding and respecting each mentee's individuality and supporting them to positively embrace their potential. I believe in providing gentle guidance, creating a trusting and supportive environment. Encouraging mentees to step out of their comfort zones, embrace challenges, and believe in themselves is crucial for their development. I also lead and mentor by example, believing that actions speak louder than words. Consistently demonstrating values and principles inspires and empowers those around me. However, I recognize that mentoring can sometimes lead to disappointment and reveal failures, serving as reminders of the complexities of human behavior.

**Improving stroke care standards in low- and middle-income countries has been identified as a priority by both Dr Jeyaraj Pandian of the WSO and yourself. What measures would be game changers in the pursuit of inclusivity and equal access?**

I'm well aware that both the European Stroke Organisation (ESO) and the World Stroke Organization (WSO) share a common goal of improving stroke

care standards, particularly in low- and middle-income countries. Collaboration between these organizations is vital in addressing the urgent need for inclusivity and equal access to stroke care worldwide.

While the WSO takes a global approach, reaching regions where stroke care is limited or absent, the ESO focuses more on Europe. Recognizing the distinct challenges in each region, it's crucial to tailor our own strategies accordingly.

For the ESO, our Stroke Action Plan for Europe (SAP-E) and the ESO-EAST initiative serve as guides for driving meaningful change within Europe. SAP-E outlines specific measures and goals to enhance stroke care standards across European countries. We're actively updating and refining this plan to ensure its relevance and effectiveness in addressing evolving challenges.

A critical part of our approach is to encourage more countries, especially those in Eastern and Southern Europe, to sign the SAP-E declaration and commit to implementing tangible actions outlined in SAP-E. By expanding this initiative's reach and fostering greater participation, we can create a united front against stroke, driving positive change and improving patient outcomes.

Additionally, we must prioritize efforts to address systemic barriers and disparities that hinder access to stroke care, particularly in underserved communities. This may involve advocating for increased funding, capacity-building through training programs, and leveraging technology to enhance remote access to care.

Through collaborative efforts with WSO and leveraging the specific areas of reach of both organizations, we can truly make a difference in the lives of stroke patients worldwide. Together, we're committed to realizing our shared vision of a world where everyone has equal access to high-quality stroke care, regardless of geographical location or socioeconomic status.

**What are currently the most exciting, important or most promising developments in stroke research?**

In stroke research, there are several exciting developments that hold great promise for improving outcomes and advancing our understanding of this complex condition. As an advocate for funding in stroke research, I'm particularly passionate about supporting initiatives that address critical areas of need, including:

- **Intracerebral Hemorrhage (ICH) Treatment:** while significant progress has been made in ischemic stroke management, treatment options for ICH remain limited. There is an urgent need to develop strategies that not only prevent ICH but also offer effective treatment options for those affected.
- **Personalized Stroke Prevention:** tailoring stroke prevention strategies to individual genetic, epigenetic, and environmental factors represents a promising avenue for reducing stroke incidence. By developing targeted preventive measures based on personalized risk profiles, we can enhance the effectiveness of stroke prevention efforts.
- **Cerebrovascular Disease and Dementia:** the link between cerebrovascular disease and dementia is increasingly recognized as a significant contributor to cognitive impairment, particularly in aging populations. There is a pressing need for clinical trials and interventions aimed at preventing the progression of cognitive decline by targeting vascular mechanisms.
- **Stroke Rehabilitation:** despite advancements in stroke rehabilitation, there is still much to be done in understanding and harnessing the potential for neural regeneration and functional recovery. There is an urgent need to explore innovative approaches to rehabilitation that can facilitate the regeneration of neural circuits and improve long-term outcomes for stroke survivors.

**The goal of Angels' new strategy – 100 ANGELS REGIONS – is identifying regions where the public is able to identify stroke symptoms and knows what to do; the EMS provides appropriate care and transport to a stroke-ready hospital; and there are enough stroke-ready hospitals offering the highest standard of acute care. What is necessary to make this strategy succeed and what relevance does it have for your vision for your presidency?**

This strategy has the potential to have profound impact by addressing the crucial need for a cohesive system of care. While individual hospital stroke teams may excel, their effectiveness is maximized within an integrated framework. Thus, the focus of this initiative on systemic coordination is pivotal for advancing stroke care.



From left, Valeria Caso, Hanne Christensen, Simona Sacco, Francesca Romana Pezzella and Else Charlotte Sandset.



continued...



Dr. Svatopluk Ostrý

Simona with her predecessor, Peter Kelly

To ensure the success of this strategy, several key elements are essential. Firstly, the presence of a dedicated local stroke leader is crucial. Additionally, support and guidance from the Angels team, coupled with active engagement of local governance, are needed for effecting substantial change.

Reflecting on my own region, while strides have been made in acute stroke care, achieving Angels Region status necessitates further refinement of our stroke network. Strengthening the collaboration with EMS, inter-hospital coordination and ensuring all patients are promptly referred to stroke-capable centers are paramount. Furthermore, extending treatment options beyond conventional time-based windows and optimizing referral protocols are areas warranting attention.

As ESO president I am committed to collaborating closely with the Angels team to implement this transformative strategy. I think that a close collaboration may be key to propel European stroke care to unprecedented heights. I firmly believe that this initiative has the potential to redefine standards of care and improve outcomes for stroke patients across the continent and I am very pleased that it will start and accompany my presidency.

**You were a young neurologist attending the ESO stroke summer school in Krems 20 years ago. Last September you hosted the summer school in L'Aquila. How has the world of stroke care and research changed over these two decades?**

It was my great pleasure to host the ESO Stroke Summer School in L'Aquila. It was an enriching experience also for me. There were several important lectures covering advances in stroke diagnosis and treatment. Interactive case reports lead by young faculty members put the contents of the lectures into practical perspective. Over these two decades there has been a massive change in the stroke area. We passed from lack of treatment to a treatable disease, we recognized that stroke can be prevented, and we are now moving into the era of focusing more on post-acute treatment.

**In March 2024, Angels launched Angels Insights Month which will be a twice-yearly activation of quality monitoring in stroke care. The idea grew out of the success of MonitorISA in Italy. Why is this approach so successful and what impact do you expect Insights Month to have on data-driven quality improvement?**

The launch of Angels Insights Month represents an additional step toward driving tangible enhancements in stroke care delivery across Europe. As seen with the success of MonitorISA in Italy, this initiative offers physicians, healthcare providers, and stakeholders regular opportunities to assess performance and benchmark against peers. This cyclical process fosters a

culture of continuous improvement, wherein lessons learned from each iteration inform iterative refinements, leading to sustained advancements in care delivery. By leveraging real-time insights and analytics, healthcare providers can identify areas of strength and opportunities for improvement.

At the European level, Insights Month has the potential to foster cross-border collaboration and knowledge exchange as participating countries share best practices and lessons learned.

I expect to witness measurable enhancements in key performance indicators, such as time metrics and outcome measures. It would also be interesting and nice to measure and monitor healthcare providers' satisfaction scores.

To maximize the impact of this initiative, it will be crucial to organize events aimed at sharing and discussing performance data. Engaging with stakeholders, patient organizations, and policymakers will further amplify the initiative's reach and effectiveness.

**What do you intend to bring to the ESO presidency that is unique and distinct from your predecessors? In what respects will the organisation be different at the conclusion of your presidency?**

ESO is a robust and well-structured organization with several flagship programs and numerous collateral activities. It boasts a strong cultural identity and a solid organizational framework, thanks to the contributions and vision of many individuals who have served in various capacities within the society. Therefore, significant changes are not necessary as everything is already in good shape.

During my presidency, I aim to pursue several objectives.

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What brings me the greatest joy are the simple pleasures and moments of tranquility that are part of everyday life.

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I will actively embrace all the ongoing strategies aimed at improving stroke care in Europe – the SAP-E, ESO-EAST, and Angels. There are already several well-established initiatives that need only to be nurtured.

I intend to enhance the democratic nature of the society and attract a more diverse range of individuals to participate in its activities. While scientific merit remains essential for progress within the society, it's crucial to recognize the value of diverse perspectives and foster a collaborative and inclusive community.

Additionally, I aim to encourage more young people to enter the field of stroke research and medicine. I will work to develop initiatives aimed at attracting young physicians to this area of healthcare.

Furthermore, I am committed to strengthening our already positive relationships with neurointerventionalists and with those involved in neurorehabilitation and involving them more actively in the society's activities.

Lastly, it is important to me to support the ESO journal, the European Stroke Journal, in becoming the premier reference journal in the stroke field worldwide.

**What are you most afraid of?**

What I fear most is anything that threatens the tranquility and well-being of my loved ones and our world. My happiness is deeply tied to the basic needs and health of my family. The thought of wars, natural disasters, or any disruption to our peaceful life worries me greatly. Additionally, I'm concerned about the state of our planet and the environmental challenges we're up against. The rapid degradation of our environment and the looming threat of climate change weigh heavily on me. I fear that greed and the relentless pursuit of profit may hinder our efforts to address these urgent issues.

**What gives you joy?**

What brings me the greatest joy are the simple pleasures and moments of tranquility that are part of everyday life: spending time with family, relaxing, enjoying the beauty of nature, and going for a walk or run in the early morning with uplifting music, as well as meeting friends.

Moreover, achieving a long-awaited and hard-earned goal is a source of joy and satisfaction for me. The culmination of a lot of time dedicated to perseverance, coupled with the realization of dreams and aspirations, brings forth a profound sense of accomplishment and fulfillment.

Equally gratifying is the act of planning and dreaming about the future. Envisioning new horizons and possibilities gives a sense of optimism and hope within me. The anticipation of what lies ahead, along with the excitement of embarking on new adventures and endeavors, adds an extra layer of excitement to life's journey.



The ESO Stroke Summer School in L'Aquila



# In a class of their own



## Lubica Fidesová shares a masterclass in FAST Heroes implementation and explains why there are 47,000 superheroes (and counting) in Slovakia.

**WHEN** the first-ever FAST Heroes Summit was held in June 2022, Slovakia's star shone very bright.



Lubica Fidesová with Janka Brokešová, mom of Ninka Ivancikova, at a gala dinner in Munich where Ninka received an award.

An elementary school in Liesek, in a small village in northern Slovakia, had made a clean sweep of the FAST Heroes leaderboard awards, winning the prizes for top school, top class and top individual. Their amazing teacher, Ms Lenka Reháková, was (appropriately) honoured with the Amazing Teacher Award, and elsewhere in Slovakia nine-year-old Dorotka Špulierová was recognised for being an example to her classmates.

FAST Heroes is an award-winning schools-based programme designed to boost public awareness of stroke. Now in its fourth year, its superhero theme continues to enchant and educate children around the world. Its impact has produced some real-life heroes including Slovak elementary schoolers Emka Horvathová, Samko and Petko Brnak (also among the honours in 2022), and Marek Bokoš, Teresa Bajsová, Ninka Ivančíková and Alexandra Czuporiová.

The FAST Slovak family now encompasses more than 1,100 schools and around 47,000 superheroes. Its goal for 2024 – which was to involve 10,000 children – has already been surpassed, with 14,710 apprentice superheroes registered by the end of March.

Slovakia's FAST Heroes community has also impressed with its creativity, designing a module specifically for secondary schools, and connecting schools with nursing homes – an idea that originated in Liesek and has now spread across the country.

A great deal of impetus comes from Lubica Fidesová, a public relations consultant with Grape PR and an indefatigable FAST ambassador. Last year her exemplary work with the campaign won the agency a prestigious PROKOP award in a competition organised by the Public Relations Association of Slovakia.

Lubica's description of FAST Heroes rollout in Slovakia is an implementation masterclass, so grab a pen before you continue reading.

### Slovakia's class act

"In the first and for us the most important phase," Lubica says, "we focus on media coverage. We highlight the results achieved thanks to the project, such as international awards, or children who have rescued relatives after learning about stroke.

"We use radio and TV presentations, articles in the press, online social

networks, influencers, and of course neurologists. We also connect with important institutions to elicit support for the project. Where we succeed, the result is widespread coverage that alerts schools that the next year of the project is about to start.

"In the next phase we focus on inviting schools, conducting webinars and explaining how to register correctly. During implementation we accompany and support the schools as much as possible. After the project is finished we decide which schools will receive a visit from the neurologists, again with the goal of promoting the successes. The culmination of the whole project is the teachers' summit and the announcement of the international results.

"We have realized the importance of collaborating with significant authorities and gaining the support of the Slovak Neurological Society. We have obtained the patronage of the Ministry of Education and the Ministry of Health and have started cooperating with the Operational Center of the Emergency Medical Service. Thanks to the support of these institutions, we have become a credible partner for schools, offering a project worth engaging in.

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I am proud that we have so many amazing teachers in Slovakia.

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“One of the greatest acknowledgments for us is the direct involvement of doctors and neurologists from across Slovakia in activities at schools. This increases the credibility and interest from teachers who are participating in the project. During school visits neurologists teach the children about stroke, and the children prepare a programme for the doctors, including singing a song. Grandparents also attend these meetings which is an opportunity for the doctors to talk about the risk factors for stroke.

“We always try to publicize these activities and when they are reported in the media, children and teachers from all over Slovakia feel part of a significant project that has a great impact on society, and they feel part of the FAST family.

“The idea of visiting nursing homes came up last year and we agreed with Lenka Reháková that it would be very beneficial. The children prepared a nice program for the grandmas and grandpas, brought them brochures about the disease, and sang the FAST Heroes song. This example has inspired other schools to also introduce the concept.

“Lenka Reháková remains one of our most prominent ambassadors. Her enthusiasm and active involvement have also encouraged other colleagues and parents to participate in the project. I am proud that we have so many amazing teachers in Slovakia. And I am happy that I have the opportunity to get to know them thanks to FAST Heroes.”

## Ripple effect

**Working with the FAST Heroes campaign is exactly what she loves to do, says neurologist Dr Martina Chovancová. And last year a stroke patient admitted to her hospital delivered a poignant insight about how knowledge spreads.**

I am a specialist in the 2<sup>nd</sup> Department of Neurology at the University Hospital in Bratislava. Usually I'm stationed at the ICU, treating acute stroke patients, or communicating with rescue workers when they are at the patient's home. When they arrive, I select patients who



Taking FAST Heroes into nursing homes has been a successful innovation.

are to be treated with intravenous thrombolysis.

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I always wanted to do something more than treat patients and do more in prevention, and before this project I did some presentations about lifestyle and risk factors.

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I always wanted to do something more than treat patients and do more in prevention, and before this project I did some presentations about lifestyle and risk factors. When FAST Heroes came to Slovakia I was eager to participate. It is exactly what I love to do.

I perform tasks within the campaign, organize events for children and their parents and grandparents, and sometimes I give interviews to local and statewide media.

Last year I was the leading specialist physician of the campaign here in Slovakia. This gave me a lot of media exposure and indirectly lead to the story I am about to tell.

In late 2023, an instance of a wake-up stroke occurred. Despite prompt presentation at our hospital within the therapeutic window, the ischemic insult had progressed beyond the point where intervention could be effective.

This patient remains in a critical but stable condition, characterized by profound hemiparesis and aphasia. He is currently residing in a retirement home under intensive care.

While he was in hospital his adult daughter recognised me from an interview that had appeared on the news website aktuality.sk in February 2023. She told me she had helped

save her father's life as a result of reading this article. She'd been able to recognise the symptoms of a stroke and instruct her father over the phone to call an ambulance.

Despite the unfortunate outcome, the daughter found solace in knowing that we had done everything within our power. She expressed gratitude for being equipped with knowledge about stroke symptoms, which made her feel safer.

She has shared her experience with friends and acquaintances, spreading awareness about the importance of recognizing stroke symptoms. She has even relayed the story to her son's teacher, encouraging them to participate in the FAST Heroes campaign at his school.

## Each one of us can save a life

**Two years after her class of third-graders topped the FAST Heroes leaderboard, Ms Lenka Reháková of Liesek Elementary School has advice for teachers joining the program.**

**How many children have you introduced to the FAST Heroes project since it started?**

It's hard to count, with a current class of almost 600 kids. As a school we have been involved every year since the project began and we remain involved in year four. It was like a 'tsunami' in Liesek. In the first year of the campaign only the primary school students (113) were involved. In the second year, 118 kindergartners also joined, and 247 secondary students in year three.

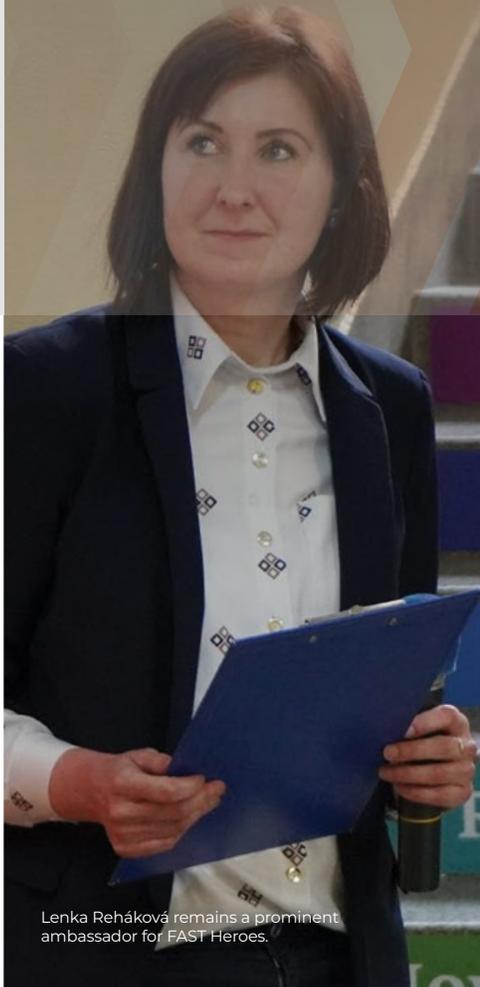
I believe that if something works, we should talk about it and pass it on. That's why I've talked about the FAST Heroes project with my colleagues in school, with the kindergarten teachers and also with teachers from other schools. And thanks to the Slovak media, many schools and teachers have learned about the FAST Heroes project and about strokes and their symptoms.



Dr. Martina Chovancová



continued...



Lenka Reháková remains a prominent ambassador for FAST Heroes.

Is your original group of 112 superheroes still involved with FAST Heroes?

My former pupils with whom I started the FAST Heroes project are now fifth-graders. Those who are still involved attend our Young Rescuer Interest Group where I teach primary and secondary students about first aid. These students, who are between the ages of eight and 15, are learning how to call the ambulance and what to do in life-threatening situations including stroke.

Are there any differences in how you present the material now from when you began?

There certainly are. The first and second year, my students and I learned about stroke and its symptoms through various fun activities. In the third year we changed our strategy and wanted to share the knowledge we had gained with others, especially younger pupils and children in kindergarten. So over the course of five weeks my pupils found themselves in the role of teachers. We also passed on the knowledge about stroke to the grandparents who visited our school and also when visiting the elderly at the Charity House of St Francis in Trstená where the students taught them about stroke symptoms. After the presentation they read FAST Heroes workbooks, spoke with the pensioners, laughed together and had a nice time. Finally they sang and danced the FAST Heroes song.

How has your experience with FAST Heroes impacted you personally?

I am increasingly aware that if my efforts to spread stroke awareness can save even one life, then it is all worthwhile. I would like to encourage



all of us to be mindful of the people around us. Each one of us can save a human life.

During the visit to the elderly in Trstená we experienced joy and mutual giving. In this mutual giving we found that the more we gave, the more we received – because older people are like living books, full of wisdom and life stories.

**If you had to give one piece of advice to a teacher who is implementing the campaign for the first time, what would that be?**

I would say: You are doing a great job of raising awareness about stroke prevention and treatment. Don't give up. You are not alone. You are the part of the FAST Heroes family. I admire your dedication and passion for the campaign. You have the power to save lives by educating children and through them their parents and relatives about the signs of stroke and how to act fast. Thank you for being part of the FAST Heroes campaign. You are an inspiration to others who want to make a positive impact in the world. Remember that every student you reach, is a potential life-saver.

## Teacher knows best

**Some of Slovakia's dedicated teachers share their experience with FAST Heroes.**

**Monika Kaplárová**



"I signed up with only one class as I didn't know 'what I was getting into'. I now know that next year I will involve as many pupils as possible. I hope this project will become known to the general public and will succeed in mitigating the effects of the disease by providing information. Personally, I will recommend this project to my colleagues and people in my neighbourhood."

**Andrea Gombariková**



"The Fast Heroes project teaches children about empathy, love and, most importantly, practical life-saving skills in the event of a stroke, one of the most common reasons they lose their elders. They pass on the knowledge they learn to their loved ones so they know how to react in a life-threatening emergency, and that's why it all makes sense."

**Martina Bajzová**



"My fourth graders were very enthusiastic about the activities of the little hero rescuers. The motivational characters, Tomi, Fero, Adam and Sofia, accompany them through learning about all the symptoms of a stroke. Even after school they continue to play the role of paramedics in the school club and practise possible stroke situations and their solutions.

The feedback from parents has been excellent. The parents themselves were surprised that they knew so little about stroke and that their young children had such precious information to pass on to their grandparents. So they were very willing to participate and have this precious information explained to them, and they captured it in photographs with joy and gratitude."

**Jana Fajnorová**



"I would recommend the FAST Heroes project to other teachers. It is creatively designed and non-violent. The project caught my attention with its originality and excellent handling of such an important topic. The children enthusiastically watched educational videos and also had fun with the animated characters. They really liked this 'experiential teaching' and enhanced it with their own dramatization of a 'crisis situation'. They will definitely remember all the important information forever. At the same time, the project contributed to strengthening the group and the sense of belonging.

**Eliška Reptová**



"As a teacher I appreciated the flexibility to adapt the materials and spend as much time on the topic as needed. The project not only provided basic information about stroke but also raised awareness among children that not only their parents but also their grandparents could be at risk. Creating an information leaflet and discussing symptoms and prevention helped some students build closer relationships with their grandparents. Shortly after the project, a close relative of one student had a stroke. Because of the discussions at home, the student's family recognized the symptoms and provided appropriate first aid."

# A tale of two stickers

In Podkarpackie we meet two paramedics for whom winning a diamond award was not enough. Intent on keeping stroke patients from slipping through the diagnostic net, they became advocates and teachers of a test that takes a few minutes but can change a patient's entire life.

This story begins in April 2022 in Poland's Podkarpackie province, ahead of two days of intensive training for EMS members. The training is the first step towards addressing treatment delays at the region's hospitals, which an earlier meeting has laid at the door of the ambulance service. Ambulance staff in the province are thought to lack the ability to diagnose stroke except in the most obvious cases; and the use of neurological evaluation scales and prenotification are inconsistent at best.

Working on a hunch, Angels consultant Katarzyna Putyło makes dozens of calls to the phone numbers supplied for prenotification. In the majority of cases, her calls go unanswered. By the time 60 EMS members arrive in the provincial capital Rzeszów for training, Kasia has had an updated and verified list of phone numbers printed on enough stickers for every ambulance in the province. The sticker is more than a prenotification tool: it is also a trigger for an action that saves lives.

The sticker turns out to be a small thing that makes a big difference. Not only do hospitals start reporting

better treatment times, but in Q3 of 2022, Wojewódzka Stacja Pogotowia Ratunkowego w Rzeszowie becomes the first EMS in the province to win a platinum award.

Change begets change, and by early 2023, the Rzeszów ambulance service has converted its platinum to a diamond award. In November, two paramedics from this unit attend the first Advanced Stroke Life Support (ASLS) training in Poland. From this event, two bright spots emerge that will rewrite the story of prehospital stroke care in Podkarpackie.

## Podkarpackie Part 2: A metal detector for stroke

Wojciech Filip and Marcin Warchoł of Rzeszów ambulance service attended the ASLS training and came away energized. They were struck by how complex stroke was and became interested in a more thorough



Wojciech Filip and a member of his team.

exploration of the symptoms. And they were particularly impressed with the MEND scale and its potential for detecting both anterior and posterior circulation strokes, as well as identifying patients with large vessel occlusion.

Wojciech and Marcin became convinced that using the FAST scale to diagnose stroke was not enough as symptoms of brainstem and cerebellum strokes could easily be missed. They started implementing the MEND scale in their own work to detect less obvious cases of strokes. Soon they had a number of cases that showed that it worked.

A patient in her sixties had been found on the floor by her family who, knowing she suffered from diabetes, measured her blood sugar level.



Wojciech Filip during the Mend workshop.  
PHOTOGRAPH: TOMASZ GÓRECKI | DIAKONIA WANG

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In order not to search aimlessly, you need to have a tool.

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Finding the result was a dangerous 400 mg/dL, they immediately contacted the Rzeszów ambulance service.

The ambulance team's suspicions were raised when the patient's relatives reported she was somehow "different" although she continued to insist nothing was wrong. Within three minutes the MEND test revealed a strength deficit in her left limbs and concluded, accurately, that the patient was having a stroke.

On another occasion they were called out to attend to a patient who reported nausea and vomiting. Nothing but a touch of food poisoning, the patient insisted, the unfortunate result of a grilled meat dinner. But the finger-to-nose test in the MEND scale confirmed intention tremor, which was the result of cerebellar dysfunction.

"Too often I meet patients who had TIA's before their stroke and the statistics are merciless," Wojciech Filip says. "Too many patients escape us through this diagnostic sieve. For me, working in emergency medical services is a bit like treasure hunting with a metal detector. In order not to search aimlessly, you need to have a tool. The MEND scale for me is like this metal detector. It is a tool. The test takes only a few minutes, but for the patient it's the rest of their life."

Wojciech has been a rescuer for 20 years. In 2022 he was among three rescuers who took the Rzeszów service to their first victory in the International Winter Emergency Medical Championships in Bielsko-Biala.

He wants suspected stroke patients to be treated like those with suspected myocardial infarction, he says.

"Virtually every patient with chest pain goes to the hospital for diagnostics. I would like the same to happen to patients with symptoms suggesting a cerebral infarction."

Marcin Warchoł became a rescuer when getting into pharmacy didn't work out. "As it turns out, plan B was something that excited me, and it's no less thrilling after almost 16 years. What's exciting about this profession is the need for constant development, the absence of boredom and above all the people. Not only the patients but also the other rescuers, doctors and nurses. You can learn something interesting from every medic you meet."

The more he learnt about stroke, the more Marcin became aware of how much more there was to know. "And then Angels entered the scene. This allowed me to expand my knowledge about many aspects of stroke and to share the knowledge and experience with other rescuers."

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Wojciech and Marcin took responsibility for the entire programme, Katarzyna says.

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Marcin is deputy director for Training Organization at the Rescue School of the Rzeszów ambulance station, and earlier this year he and Wojciech took the lead in an initiative to implement the MEND scale throughout the Rzeszów service.

### Podkarpackie Part 3: Not quite a sticker

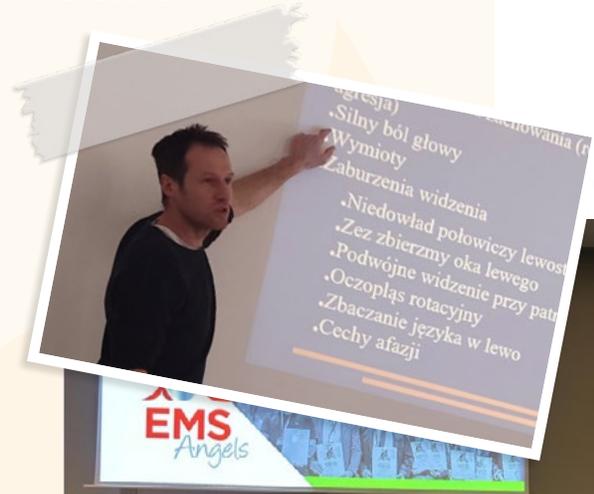
Wojciech and Marcin took responsibility for the entire programme, Katarzyna says of the training event at the end of February. "They did a deep dive into stroke symptoms, introduced the MEND

scale, presented their cases, and lead a practical workshop so everyone could try it. A doctor from the thrombectomy centre also attended, so the biggest stroke centre in the region was aware of the change in protocol, and everyone was very receptive to a new tool being put to use."

The result of the training and the discussion that followed is a combination of the MEND scale, the Angels prehospital checklist, and the criteria for the EMS Angels Awards.

This "pocket checklist", Kasia says, "will ensure that they don't miss or forget anything, and the MEND scale allows them to dig deeper in cases where the diagnosis isn't clear."

It's not exactly a sticker, she says of the laminated checklist that is being disseminated to paramedics across the region. But like the one with prenotification phone numbers, this will be a tool and a trigger inside every ambulance.



Everyone who attended the MEND workshop was very receptive to a new tool being introduced.  
PHOTOGRAPH: TOMASZ GÓRECKI | DIAKONIA WARSZAWA



# Summa 112

## Measured in minutes

The experience of Madrid's SUMMA 112 demonstrates how the EMS Angels Awards function as a tool for improving performance by highlighting areas to be addressed through targeted actions.



Dr. Alicia Villar, Medical Subdirector SUMMA 112 and Dr. Manuel Guiote (General Manager SUMMA 112).

THE EMS Angels Awards were launched when the Covid-19 pandemic was in its second year. The cost to emergency medical staff everywhere had been enormous, and in most countries morale was low.

"Motivation is very important now," said Dr Nicolás Riera, the stroke code co-ordinator at Madrid's medical emergency service SUMMA 112 who was among the international EMS experts who helped create the awards. "Paramedic teams need something new to reboot their mindsets in the context of an ongoing pandemic."

Madrid had been at the epicentre of the pandemic in hard-hit Spain where the coronavirus had infected over 3,5 million people and claimed more than 78,000 lives, disrupting health services and taking a heavy toll on frontline medics.

Having their efforts acknowledged amid a spirit of friendly competition

among teams would be a potentially powerful way to raise morale and reward EMS personnel for raising their game.

Important as it was to recognise EMS teams that excelled in stroke care, the awards were also intended to be a tool for improving performance by highlighting weaknesses that could be addressed through targeted actions.

"The awards are not about past work but about future performance," said Petr Jaško, EMS chief in the Czech Republic's Moravian Silesian region, ahead of the inaugural awards ceremony in Lisbon in October 2021. Their impact, he predicted, would be "measured in minutes".

### Pinpointing a weakness

Future performance was on Dr Nicolás Riera's mind in Lisbon where he collected a gold award on behalf of SUMMA 112. His team would be proud. But winning gold also signalled there was room to improve, and the awards criteria held the key to where they should focus their attention.

SUMMA 112 had delivered a near impeccable performance in every category but one. To reach platinum or diamond status, it would be necessary to reduce their on-scene time (OST), which meant overcoming among others the challenge of vertical urban design in the tall, densely populated Spanish capital.



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In 2022, the **SUMA 112 team scored 100%** for prenotification (identifying and prenotifying the right hospital) for the second year running.

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In 2022, the SUMA 112 team scored 100% for prenotification (identifying and prenotifying the right hospital) for the second year running. They had also shaved 4,5 minutes off their OST, but it was still almost twice as long as the maximum 15 minutes recommended by international guidelines. When they received another gold award in Berlin that October, they began to consider why, besides Madrid's large number of high-rise residential apartments, their efforts to improve were having such a muted effect.

A meeting to analyse their performance raised the possibility that managing prenotification was adding a significant number of minutes to the time between on-scene arrival and departure. To test this hypothesis, they analysed the hospital prenotification process for all cases where stroke code was activated during December 2022, a month during which the median OST was 22 minutes.



The Air ambulance team SUMMA 112. From left, Adela Muñoz, Antonio Castán, Lucía Benavent and Nico Riera.

The analysis (the results of which were presented as a poster at EUSEM 2023) showed that the median prenotification management time (PMT) was 8 minutes when, as in most cases, only one call to a hospital was made, and reached 16 minutes when calls had to be made to four

hospitals. Overall the median PMT was 9 minutes, accounting for almost 45 percent of OST. The researchers concluded that efforts to reduce OST would entail changes to the hospital prenotification protocol.

### Defining the problem

Angels consultant Alicia Arjona explains that a location-specific set of conditions impacts prenotification management in Madrid. The EMS service uses a unique prehospital scale, the Madrid-Direct Referral to Endovascular Centre (M-DIRECT), which is highly accurate in identifying thrombectomy candidates for direct transfer to thrombectomy-capable centres. Unlike in most Spanish cities, mechanical thrombectomy is available at 10 hospitals in the capital, but the duty to treat patients with thrombectomy is rotated among these hospitals on a previously agreed schedule. A hospital on the schedule may however decline to accept a patient if they have reached their capacity. This accounts for the worst-case scenario where, before they can depart the scene, the EMS have to make up to four calls to locate a hospital that will accept their patient.

Serving as a checklist for providers of pre-hospital stroke care, the EMS Angels Awards have helped EMS teams across Europe identify and act on opportunities for intervention and improvement. Their efforts have not gone unrecognised: from nine awards in 2021, there were 63 in 2023, including 19 for Spain.

Although SUMMA 112 would collect their first platinum award, they attributed this to a chance occurrence: the difficulties underlying on-scene delays as confirmed by their research, had yet to be addressed.

But a problem well-defined is a problem half-solved, at least according to Albert Einstein. In all participating countries the awards have done more than pinpoint weaknesses: they have changed the conversation around prehospital stroke care, and trained a

light on systemic problems that have long been left in the dark.

They have also suggested new solutions to old problems.

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One important insight was that **they were conducting advanced prenotification** with the tools of the last century.

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### Solving complexity

The analysis of the audio files for December 2022 revealed problems that wouldn't be solved by revision of the hospital prenotification protocol alone. Minutes were being lost to inefficient interactions between hospitals and EMS, particularly where these conversations were drawn out as the result of time-wasting questions arising from a lack of trust.

One important insight was that they were conducting advanced prenotification with the tools of the last century. In the offing is a digitalised process that will eliminate human error or bias, and which could provide realtime information about the capacity of thrombectomy centres on the schedule. A digital process in other words that will be equal both to the complexity of Madrid's stroke network and to the sophistication of diagnostic tools like M-DIRECT.

Whether SUMMA 112 will finally be among the diamond winners at EUSEM 2024 matters less than the prospect that stroke patients in their city will reach the right hospitals faster. Their PMT-related interventions are, like the EMS Angels Awards, aimed at preserving life. And as Petr Jaško suggested, when it comes to stroke, life is measured in minutes.



In Lisbon, Nicolas Riera collected a gold award on behalf of the team from Madrid.

# Team is brain

When a highly motivated stroke team joins forces with a highly motivated team of paramedics, it results in better outcomes for patients, and diamond awards all round.

**TWO** things you must know about Wałbrzych, the city that is the setting for this story.

One is that it became a coal mining town in the 18th century, and ceased to be one in September 1996 when the last truck of coal was brought to the surface. A museum now stands where the coal mine used to be, but above ground the post-mining town carries the scars. Unemployment is high and many former miners live in straitened circumstances.

"Because the mines existed, and because they closed, the society is sick," says Dr Patrycja Marciniak, a young strokologist at Dr. Alfred Sokołowski Specialist Care Hospital where it's common to see chronic diseases of the cardiovascular and pulmonary systems, and as many as 50 stroke patients per month.

To spread awareness among those most likely to be affected by stroke, Dr Marciniak together with cardiologist Dr Aleksandra Potocka-Chmielewska regularly gives talks at the local branch of U3A (a global organisation dedicated to knowledge-sharing among seniors) and is delighted that activists in smaller communes nearby are now following her lead. She also encourages Wałbrzych schools and



kindergartens to implement the FAST Heroes campaign through which children learn to recognise stroke symptoms in their relatives and carers.

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This is an extremely important and necessary initiative, especially in communities like ours.

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She says, "This is an extremely important and necessary initiative, especially in communities like ours."

The second thing to know about Wałbrzych is that its ambulance service and the hospital where Dr Marciniak works are first-rate institutions exceptionally able to care for its vulnerable population. And when it comes to stroke management, they're among the best in Europe.

Both the hospital and the ambulance service have achieved diamond status in Angels award programmes, and both parties will tell you that they couldn't do it without the other.



Dr Patrycja Marciniak with Angels' Katarzyna Putyło and Mateusz Stolarczyk.

## Same goal, new measures

This story about two teams working together for the benefit of stroke patients began in 2017 when the neurology department of the Sokołowski Hospital invited members of the ambulance service to a multidisciplinary meeting. Here, with the consent of the director of the EMS Mr Ryszard Kułak, head neurologist Dr Katarzyna Krawczyk-Rojek introduced a protocol for managing stroke.

The ambulance personnel immediately started implementing all the items set out in the protocol. These included using the ROSIER scale to detect stroke, noting



The team at Dr Alfred Sokołowski Specialist Care Hospital.

the patient's medical history and medications especially anticoagulants, setting up two peripheral intravenous catheters, prenotifying the hospital emergency department, and calling the neurologist on a special telephone number to let them know a suspected stroke patient was on the way. All these actions served a single aim – to ensure that the patient got treatment faster.

Meanwhile at Sokołowski Hospital, Dr Krawczyk-Rojek was systematically introducing new measures to achieve the same goal by eliminating delays along the stroke pathway.

When Angels consultant Katarzyna Putyło visited the hospital a few years later, she would find a streamlined pathway that left no stone unturned. Ambulance prenotification meant there was a neurologist waiting in the emergency department when the patient arrived. Stroke patients were fast-tracked through the ED, and transferred to the CT laboratory as quickly as possible. Because radiology was a privately owned entity within the hospital, it was not yet possible to deliver patients directly to CT, but the practice of commencing thrombolysis in the CT room was gradually being introduced.

To ensure stroke patients received the best possible care during their stay in hospital, the hospital had opted to participate in QASC Europe, a FeSS protocol implementation study in post-acute care. They had also enrolled with the stroke care quality improvement registry RES-Q, and took advantage of data analysis to monitor their performance and identify gaps.

Every single intervention had a positive impact on patient outcomes. The average door-to-needle time dropped to between 15 and 20 minutes, and the treatment rate rose above 20 percent. In the stroke unit where patients were admitted after treatment, engagement was up among the nursing staff as awareness grew of their impact on patient outcomes. Dysphagia screening was responsible for a dramatic drop in the number of patients with aspiration pneumonia.

At the end of 2019, Sokołowski Hospital received international recognition for their efforts to improve stroke care, reaching platinum status in the ESO Angels Awards. They won their first diamond award at the beginning of 2020, and over the next three years added seven more.

But that is only half the story.

## Feedback is the glue

During a meeting in 2021, paramedic Mateusz Pitiło's ears pricked up when he heard Drs Patrycja Marciniak and Dagna Fańciszevska talk about the EMS Angels Awards that recognise excellence in prehospital stroke care. The Wałbrzych ambulance service had continued to meet the standard of care defined by Dr Krawczyk-Rojek in 2017. He knew this was something his team could win.

Mateusz says, "Studying the awards criteria, I concluded that we had been conducting ourselves in a similar way and meeting many of the standards for almost four years. Receiving the award seemed almost a formality, but it would also be an opportunity for further development, motivation, updating our rules of conduct to become even more efficient, and monitoring quality."

In October the following year, Mateusz stood on a stage in Berlin to accept Wałbrzych ambulance service's first EMS Angels platinum award. Then they raised their game and three months later won a diamond award.

"It is impossible not to notice the correlation between both EMS and the hospital receiving a diamond award," Mateusz says. A synergistic relationship appears to be at work, in which they each enhance the effectiveness of the other so that together they create a greater contribution than they would independently. This, says Mateusz, occurs as the result of "continuous quality monitoring, mutual understanding and motivation that speed up prehospital and hospital proceedings, and feedback from the neurology department that shows rescue teams how important they are in the management of a patient who has suffered a stroke".

The F-word is important. Feedback was something the paramedics asked for, Katarzyna says, because they otherwise had no idea what happened to a patient after they delivered them. Now doctors remember to text Mateusz with information about patient outcomes.

"We regularly contact the emergency services to let them know that, thanks to their own efforts, a patient could undergo thrombolysis and thrombectomy and their condition improved," Dr Marciniak says. "It is

extremely important to have contact with the rescuers and opportunities to exchange experiences and have joint discussions about specific cases."

Feedback is the glue in the relationship between hospital and EMS. Mateusz says, "Take for example a patient who was brought to hospital with full aphasia and paresis and was discharged with little or no deficits. Passing this information on to the team lets them see the effects of their own work. It gives a sense of joy and awareness of how important a link you are in patient management.

"Receiving feedback allows for development. Thanks to feedback, teams are able to analyse what was done well and what was wrong. This gives the opportunity to draw conclusions for the future. Feedback identifies areas that require improvement, which allows for appropriate adjustments to be made to common protocols and procedures. I believe that this is one of the key elements to improve cooperation with the hospital."

## Team is brain

Teaming up with the ambulance service in 2017 was the first step towards improving the quality of the entire patient survival chain, Dr Marciniak says. "They say that a chain is only as strong as its weakest link, and in this instance this is the perfect metaphor.

"The initial links in the chain are the patient and the ambulance service – so we cannot overlook the importance of training the community about stroke. And of course we cannot forget about the next links – working closely with radiologists and improving the quality of care in the stroke ward. Everyone in the community of people involved in treating stroke is familiar with the slogan, 'time is brain'. We think it is even more accurate to say that 'team is brain'."

This kind of teamwork can only come about where there is goodwill, Mateusz says. "Joint development of an appropriate stroke protocol cannot take place without the goodwill of both parties. I am very happy that together with the neurology department in Wałbrzych we can be part of a wonderful machine whose goal is faster and faster procedures, diagnostics and treatment, and minimising deficits in patients with stroke."





# Call to action in Croatia



First meeting with Prof. Hrvoje Budinčević (left) in Zagreb.

A hospital in Koprivnica near the border with Hungary needed help to reduce their DTN time and raise their recanalization rate. Within a year, Angels consultant Maria Sheverdina's patient, systematic approach delivered promising results.

ALTHOUGH tourist brochures might suggest otherwise, there is more to Croatia than its picturesque and intricately indented coastline and pristine beaches.



The upper arm of its crescent shape is as green as the coast is blue, and that is not the only difference between its inland and coastal regions. There's the mild Mediterranean climate on the coast versus the warm summers and cold winters of continental Croatia, plus indications (dispiriting for prospective real estate buyers looking for an ocean view) that coastal properties can cost around five times more per square metre compared to more affordable properties in the northeast.

Still more sobering is the fact that (according to a 2015 study) the incidence rate of stroke in the continental part is 45 percent higher than at the coast where fish, fruit, vegetables and olive oil are regularly consumed.

Time to double down on plans to stick to a Mediterranean diet?

But this disparity is not the primary reason why Angels consultant Maria Sheverdina began her work in Croatia in the Koprivničko-Križevačka region located on the northeastern border with Hungary. She says, "When I started working in Croatia I decided

to go region by region. And it made sense to start in Central Croatia and the hospitals around [the capital] Zagreb."

Zagreb was the destination for her first trip to Croatia at the invitation of Prof. Hrvoje Budinčević who as well as heading up the award-winning neurology department at University Hospital Sveti Duh and the Croatian Stroke Society, serves on the steering committee of the ESO's Stroke Action Plan for Europe.

Also present at the meeting was the team from the General Hospital "Dr Tomislav Bardek" in Koprivnica whose head of neurology, Dr Juraj Mark Poje, attended an Angels Train the Trainer workshop in 2019.

Dr Juraj wanted to make changes in his hospital to reduce their DTN time of 85 minutes, but he needed support. So her next visit to Croatia, in May 2023, took Maria to a crucial meeting in Koprivnica, where Dr Juraj's hospital was treating between 2 and 3 patients per month.

The hospital director Dr Mato Devčić, himself a specialist in anesthesia,

resuscitation and intensive care, opened the meeting, underlining the importance of stroke. Everyone else in the room, representing several departments, would become part of the stroke improvement working group lead by Dr Juraj, emergency department head Dr Dijana Osman and neurology head nurse Gabrijele Šimunić (univ.mag.med.techn). They were joined by the director of the EMS Zlatica Kučko Gudelj (dipl.iur.) and EMS physician Dr Ana Domjan Babić whose enthusiasm would be of vital importance in the strategy that would emerge from the meeting.

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Maria wanted to help them implement the **four key priority actions** that were guaranteed to **shorten DTN times**.

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Stroke champions at General Hospital "Dr Tomislav Bardek" in Koprivnica.

It was soon clear why the DTN time at General Hospital "Dr Tomislav Bardek" was quite long. Stroke patients arrived at the hospital without prenotification and were admitted to the emergency department (ED) which carried out their standard internal procedure. The ED physician made an assessment and ordered a CT scan after which he alerted the neurologist. The neurologist then came to the ED and examined the patient before deciding on the next course of action.

Maria wanted to help them implement the four key priority actions that were guaranteed to shorten DTN times, and prenotification was the logical place to start.

It was agreed that in future the EMS would directly prenotify the neurologist who would meet the patient at the emergency entrance and accompany them right up to the clinical decision. The process would be supported by the prenotification checklist, which Dr Juraj translated into Croatian.

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**DTN is down to between 40 and 60 minutes.**

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In order to shrink the change so the task would seem less daunting, it was further agreed that a one-month trial period would commence on 12 October 2023, to understand how prenotification and checklists worked in practice.

Maria's next visit to Koprivnica was on 22 November. It was the start of winter and there was a bite in the air. But inside General Hospital "Dr Tomislav Bardek" Koprivnica there

was the warm glow of success. In the preceding month the hospital had treated nine stroke patients in an average DTN time of 55 minutes.

The hospital now has two pathways for stroke patients. Those that arrive via EMS are met at the entrance by the neurologist who has been prenotified of their arrival. In the roughly 25 percent of cases where patients arrive via private transport, the ED physician will perform a quick examination before alerting CT and the neurologist. The neurologist will meet the patient at CT where the ED doctor will hand over a checklist that is currently being adapted for this purpose. Decision-making in both scenarios will take place at CT.

Dr Dijana Osman now has the task of creating and adapting the checklists for ED, contraindications, new protocols and pathway algorithms, that will standardise the updated stroke pathway.

These latest refinements are the consequence of two simulations that took place in March. In both cases, the simulated pathway was that of patients arriving on their own, with Dr Ana Domjan Babić of the EMS performing the role of the patient. The first simulation was completed in 33 minutes. After pathway changes to eliminate duplication, a simulation two weeks later produced a DTN time of 18 minutes.

June 2024 will bring more progress to Koprivnica with another simulation (this

time involving the EMS), a process review, and training for nurses that will include nurses from nearby cities.

Dr Juraj should be pleased as he already is with the enthusiasm of everyone in the working group. DTN is down to between 40 and 60 minutes; quality monitoring has become a priority, and both hospital and EMS are now well within reach of gold awards.

The forecast is that it will be as sunny and warm inside as out.



Dr Ana Domjan Babić of the EMS in the unfamiliar role of patient, attended by Dr Juraj Mark Poje and nurse Gabriijela Šimunić.





# A dream finds a team

The problem of stroke care in Ohrid is being solved through strategic symbiosis between two hospitals with different and complementary sets of resources – and with a little help from Ukraine.

You could hear the siren before the ambulance came into view, its emergency lights blinking a warning to other vehicles and passersby as it hurtled through the streets of Ohrid in the direction of the General Hospital on Sirma Vojvoda Street.

Inside the ambulance were Dr Mihail Kicov of the emergency medical service who was attending the patient, and Dr Maja Bozinovska of Special Hospital St Erasmus in the unfamiliar role of concerned relative. Waiting at the emergency entrance for the patient to arrive, was Dr Golube Vasilevska who would “treat” the patient 17 minutes after they arrived.

In the driver’s compartment Angels consultant Maria Sheverdina had to grip the dashboard to stay in her seat.

“They were driving our patient as if it were a real emergency,” she recounts of the first ever stroke simulation to take place in Ohrid, a city located on one of Europe’s oldest and deepest lakes, on the border with Albania. Before the simulation started, she’d given a brief presentation to remind everyone of what they were fighting for – to establish a stroke centre that would serve the 200,000 or so people who live in Ohrid and the nearby lakeside towns of Struga, Debar and Resen.

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**A lack of equipment in the neurology department has limited their capacity for treating stroke.**

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To understand their strategy for achieving this goal, it helps to think of the mutually beneficial relationship between a bee and a flower, or between a clownfish and an anemone. In nature, symbiotic partnership are formed to solve problems via a collaboration where each enhances the other. The problem of stroke care in Ohrid will likewise be solved through strategic symbiosis between two hospitals with different and complementary sets of resources.



After the simulation: Dr Maja Bozinovska and Maria Sheverdina with their “patient”.



Dr Golube Vasilevska attends to her “patient”.

The destination of this high-speed simulation is the General Hospital of Ohrid, a large facility with three neurologists who are prepared to make waves – chief neurologist Dr Monika Petrovski and her colleagues Drs Ksenija Majstorovic and Golube Vasilevska. Despite their extensive skills, until March this year only one stroke patient had undergone thrombolysis at this centre. That treatment was performed by Dr Monika in the cardiology department which is furnished with the necessary monitors and equipment.

A lack of equipment in the neurology department has limited their capacity for treating stroke. This has in turn lead to a further limiting factor – a lack of experience.

The problem will be solved as follows: By pooling resources and expertise, a stroke system is to be established at the General Hospital, not only converting it into a stroke centre but realising its potential for becoming the leading hospital in the region.

An 11-minute car ride away is Ohrid's Special Hospital for Orthopaedics and Traumatology St Erasmus, the workplace of neurologist Dr Maja Bozinovska. She is a seasoned strokologist, a board member of the Stroke Alliance for Europe (SAFE) and since 2014 the founder and president of STROKE Ohrid, an ESO and SAFE backed local stroke association.

Maria says: "There are many difficulties in Macedonia, one of which is the absence of government support. Stroke is not considered a priority at all, and the frequent changes at government level cause people to lose their hope and motivation. Circumstance dominates. In this context, when you find people who remain willing and won't stop believing, they are a treasure.

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**The dream needs a team, and that team resides at the General Hospital where with Dr Maja's support an organised stroke pathway will see the light.**

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"Dr Maja is that physician who has held on to the dream of every stroke patient having access to treatment – not as a function of circumstance but as the result of a well-established management system.

"The stumbling block is that while her hospital has access to CT and well-trained radiologists, they don't have the staff to form a stroke team and Dr Maja knows she won't be able to build a stroke centre on her own."

The dream needs a team, and that team resides at the General Hospital where with Dr Maja's support an organised stroke pathway will see the light.

There are two more keys to the success of this enterprise. One is securing the cooperation of the EMS which is easily accomplished thanks to the enthusiastic participation of EMS head Dr Ljupka Nikolovska and her colleague Dr Mihail Kicov.

Next is the influential role of hospital director (of the General Hospital) Dr Asen Shain, whose presence at the initial meeting last November meant that some problems could be solved on the spot. An infusion pump (necessary for the administration of the thrombolytic drug) was immediately obtained.

The project will rely on his sustained support for the acquisition of monitors and POC testing kits that will make good the equipment shortages, and to procure sufficient quantities of the thrombolytic drug.

For the team at the General Hospital receiving a stroke patient within the treatment window but not having the drug with which they can save a life, is unimaginably frustrating. For the patient it is a tragedy.

To address remaining concerns, including inexperience and the challenge of building capacity for a 24-hour service, Maria played a master stroke, inviting Dr Dmytro Lebedynets to address the Ohrid team during an online event in December. Dr Lebedynets is head of the stroke centre at Feofaniya Hospital in Kyiv and steers a group of experts in neurology and neurosurgery in the Ukrainian Ministry of Health who over the past five years have made Ukraine an outstanding example of how to build and improve stroke care.

"Dr Dmytro knows all the guidelines



Inside the ambulance with Dr Maja Bozinovska as concerned relative.

better than anyone," Maria says, "and he has firsthand experience of creating a stroke service from zero. He explained the requirements for stroke unit establishment so they could focus on that as a long-term goal, and shared his own stroke journey including his experience of working with a lack of resources."

Everything was possible, he said. And after having their questions answered, the Ohrid team were starting to believe it too.

Since the simulation in February, the first patient has already been treated in the neurology department at the General Hospital. The training programme continues with a workshop for nurses conducted by Macedonia's chief nursing officer, Sr Gordana Dimeska from the capital, Skopje, and presentations by Dr Maja on thrombolysis and the patient pathway.

Quality monitoring will ensure continuous improvement, and both the hospital and the EMS are now submitting their patient data on RES-Q in order to receive feedback and become eligible for an Angels Award.

Symbiosis has helped living creatures innovate and thrive for billions of years. In cities like Ohrid, where doctors have to rely on themselves to provide better outcomes for patients, partnerships between hospitals and a pooling of resources are a source of hope and a signal that everything may indeed be possible.



The team that made the difference at the General Hospital of Ohrid.

# Proud moments in Stara Zagora



From left, nurse Eva Stoyanova, nurse Silvia Yovcheva, head nurse Neli Dimova, Dr Kristiyan Naydenov, Dr Teodora Manolova, Dr Yordanka Argirova and Dr Dimitra Thomas.

A review of the stroke pathway, a change in mindset and improved cooperation with the EMS were the key actions that transformed stroke care at this hospital. Telling the story are those who put their hearts into the work.

In Q3 of 2023, after treating 67,7 percent of strokes in under 60 minutes and having increased its recanalisation rate to 26,8 percent, UMHAT Prof. Dr Stoyan Kirkovich, a university hospital located in Stara Zagora, won its first ESO Angels Gold Award. Here to tell their story are:

**Dr Teodora Manolova-Mancheva**, head of the neurology department.

**Dr Hristo Dimitrov**, a medical doctor at the Centre for Emergency Medicine & Accidents.

**Prof. Yovcho Yovchev**, the hospital director.

**Dr Bozhidar Petrov**, chief of neurosurgery.

**Drs Yordanka Argirova, Georgi Georgiev and Kristiyan Naydenov**, neurology residents.

## Changing and relying on each other

**Dr Teodora Manolova-Mancheva:** The first thrombolysis I did was during a very emotional period for me. The head of our department [Professor Ivan Manchev] had just died after having a stroke himself. I had just come back after bereavement when we admitted an elderly woman who was having a stroke. Her family, who were in the medical profession, recognised the symptoms and brought her to the hospital a mere 12 minutes after onset.

I was on duty together with my trainee Dr Georgi Georgiev. We pushed her to the CT scanner ourselves without waiting for porters; we prepared the rtPA ourselves and administered the treatment. It had been a heavy stroke, but thankfully she recovered.

We started treating acute stroke with thrombolysis in 2019. There had been earlier attempts but due to organisational changes and hospital mergers things didn't take off. In 2019, after an Angels training, we started our proper but cautious attempts.

After our work with Angels resumed in July 2023, we evaluated all the elements and departments involved in the process. We came up with priority actions, did simulations and trainings, and improved our patient care in the postacute phase. We also held meetings to analyse cases that hadn't gone well, and we discussed our national protocols. These are more limiting than newer international guidelines in terms of contraindications, so in reality we have more indicated patients than the national protocols suppose.

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We adopted the approach that we should look for reasons to treat, rather than reasons not to.

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Our goal was to support every doctor by giving real-time assistance while they were actively treating a patient with stroke. Our target was to reduce the times as much as possible.

One significant step was to work on our mindset and treat stroke patients as a priority. We adopted the approach that we should look for reasons to treat, rather than reasons not to. Bit by bit this mentality is taking hold.

Our biggest priority action was to implement a phone number for prenotification so that the neurologist can go directly to the emergency department (ED) when a stroke patient is on the way. We've had a case where a patient completely bypassed the ED. Thanks to this phone number we went from the hospital door straight to the CT and were able to start treatment within 10 minutes.

**Dr Hristo Dimitrov:** I can't say that before July 2023 stroke patients were neglected by EMS teams, but after collective trainings with the hospital staff, patients with symptoms suggesting stroke are definitely treated faster. This is the result of training and the ensuing discussions about practice, logistics, and sharing the results from our collective efforts. There is no doubt that collaboration with our colleagues from the ED and neurology clinic results in medical care that is timelier and therefore of better quality. This of course helps reduce the patient's odds of disability.

The pathway now starts with a phone call from the EMS team on site to the neurologist on duty. During this phone call we report the symptoms, time of onset, vital signs, any other information about the patient, and the approximate time we'll arrive at the ED. We have established a good channel of communication between EMS and the hospital, which is the important aspect of the relationship.

**Dr Manolova:** Establishing this relationship wasn't easy and the process is still underway. It is important to actively seek collaboration and to communicate how important it is to transport the patient within the therapeutic window, and how a concise medical history together with a phone call improves the clinical outcome of

the patient. Regarding prenotification and identifying patients suitable for treatment, we are seeing an increase in the engagement of EMS personnel. We are relying on them more and more and because of this we have improved our results.

**Prof Yovcho Yovchev:** The collaboration between the subregional divisions of EMS and the hospitals is critical for the timely and adequate treatment of emergency cases. According to the national standard for emergency medicine, every patient in critical condition must be transported to the closest hospital, depending on the hospital's competency level. Our hospital has the highest competency level and number of staff in the region. Despite this, we have witnessed the transportation of patients in the so-called "golden hour", with diagnoses that presuppose emergency resuscitation and therapeutic methods, to hospitals that do not have the necessary diagnostic capabilities to precisely assess the level of emergency. This problem has existed for years, and it leads to loss of time that is critical for the patient.

However, in the last few months we have observed a tendency for better synchronicity between the EMS team and our ED. I hope that ensuring an adequate and timely diagnosis for improved treatment perspectives will continue to be the main motivating factor for the work of EMS staff.

**Dr Dimitrov:** Providing regular feedback to EMS staff, especially if the patient outcome has been positive, will further stimulate them to do a good job. We would definitely benefit from regular meetings with the hospital staff so we can further remove obstacles and mistakes.

**Dr Bozhidar Petrov:** Some of the most impactful changes we observed after July 2023 were the improvement in competency, motivation and communication between teams, and the unification of many departments to work in synchrony for the benefit of the patient. Without doubt this improved cooperation between hospital and EMS will benefit other patients too.



## Of family, first patients and neurology as art

**Dr Dimitrov:** I chose this profession because of the feeling it gives you when you see the result of having helped a patient. I remember the first patient after we started our dedicated work with stroke patients. It was a woman around 80 years of age with motor aphasia, after which she also

developed hemiparesis. I did the medical exam as quickly as possible, then prenotified the neurologist who was waiting for the patient at the ED. The patient was then immediately scanned and treated. The result is that today this patient does not have any disability and has completely recovered from her symptoms.

**Dr Georgi Georgiev:** The first patient I had to diagnose with stroke and take responsibility for, was my grandfather – he'd had an ischaemic stroke. I was still a medical student then, in year four.

Two exceptional teachers helped me find myself and my path in life. The first was my chemistry teacher thanks to whom I understood the subject and fell in love with it, and who also taught me to believe in myself. The other was Prof Manchev, at the time the director of the neurology clinic and my neurology professor at university. I remember his lectures to this day.

After I completed my exams he invited me to participate in his hospital rounds. I was captivated by his air, his medical examinations, his discussions of the patient cases, and his general behaviour. Through him, I saw medicine, and particularly neurology, as an art.



Dr Teodora Manolova with Dr Hristo Dimitrov from the EMS.

continued...



From left, Dr Kristiyan Naydenov, Dr Dimitra Thomas, Dr Teodora Manolova and Dr Yordanka Argirova.

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**I fight for my patients every day.** The fact that one of my mentors left this world because of stroke **motivates me.**

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**Dr Manolova:** Neurology is for me one of the most interesting medical disciplines – it's far-reaching, colourful, intensive, logical, it requires detailed study of the patient's problem but paradoxically it can also require rapid intervention.

Over 50 percent of patients in neurology are never actually cured of their ailments, but thrombolysis by contrast is one of the few treatments that definitively make the patient better.

Prof Manchev, Acad Ivan Milanov, and Prof Rossen Kalpachki have all influenced my career. Prof Manchev was my mentor and taught me everything. There is in my view no-one in Bulgaria who knows the fine details of every aspect of neurology like Acad Milanov. And Prof Kalpachki showed me exactly how to treat my patients effectively, and I know he will never refuse to help me.

**Dr Bozhidar Petrov:** A leader needs to set a personal example, they are competent, responsible, hard-working, responsive, and put their whole heart in their work. Dr Manolova is this kind of person.

**Dr Manolova:** It has never been a goal of mine to be the head of a department. I don't like conflict, nor do I like to be the centre of attention and responsibility. But things change and after I accepted stroke treatment as a personal mission and priority, I came to value this position. I fight for my patients every day. The fact that one of my mentors left this world because of stroke motivates me. I remember it happening right before my eyes and being powerless to help him. I could only watch as he got the stroke and then slipped into a coma. Now I'm developing myself and make every effort to give others the opportunity for treatment.

**Dr Yordanka Argirova:** My grandmother had Alzheimer's, the other had a brain haemorrhage, and my father had a stroke. So I know what it is like to care for patients with



Dr Teodora Manolova.

serious neurological conditions. Even if you can't do anything for the patient, an important part of the doctor's role is empathy. In Bulgaria, this is still not much discussed, but from my perspective if you cannot empathise with a patient you shouldn't be a medic. I've always wanted to go into this profession and am very pleased that I have fulfilled my dream.

### III Proud moments and a perfect world

**Dr Manolova:** The mission of every medic is to help their patient. We are all emergency neurologists and as such we know what the outcomes are, both short and long-term. There is a treatment for stroke, it was established more than 20 years ago. We cannot allow anything to stop us, not even our own hesitation, because the patient simply will not get better on their own. The outcome will affect the patient and their family throughout their lifetime. When the patient is on the gurney in front of you, totally helpless, this is the only thing that you have to be thinking about.

It is incredibly important to educate and support younger doctors for their own growth and the future of the discipline. We have to invest in young people, share our valuable experience with them, in order to put them on the path to self-development and so they'll have the confidence to embrace innovation in contemporary neurology.

They also have to accept that mistakes are part of the game. Only he who doesn't work makes no mistakes. You just have to learn from your actions and move ahead. This is what I teach my residents.

**Dr Georgiev:** My work in this clinic is certainly having an impact on my professional development, but it

has also helped me to gain a greater appreciation of life itself – of what is truly important.

**Dr Argirova:** Professionally I have gained a lot of experience. I make decisions quickly and confidently; I know that there is no other option and I must do my utmost for the patients. I feel the same effects on my personal life.

**Dr Manolova:** Receiving the ESO Angels Award was a proud moment, of course. It was a surprise, actually, we hadn't expected it. But proud moments occur almost every day when I see how my colleagues treat patients with stroke. I'm actively involved in their work and every day they make me proud. I was proud of Dr Argirova when she saved the life of a young man of 36 years. I was proud of Dr Naydenov who managed to administer rtPA to a patient within 10 minutes of their arrival.

**Dr Kristiyan Naydenov:** It was thanks to Prof Manchev that I arrived at this clinic. He paid attention to me as a student, kindled my interest and encouraged me.

I chose to study medicine because I was looking for a pure, intellectual profession. Neurology was a love at first sight and still is. We are in the 10th year of our romance, which is a critical year in a long-term relationship.

Professionally, the experience in this clinic jumpstarted my development. I build on my knowledge and experience every day. However, it has taken a toll on my personal life – the work is very stressful, and we bring this home with us. The heavy responsibility that we carry always weighs on my mind.

I have also learned that the general health knowledge of the population is too low, the priorities of patients are incorrectly arranged, and their general level of education has a

direct correlation with what they do to preserve their health. I learned that you have to have many sound personal qualities to be a successful neurologist and to perform the volume of work required to the necessary high standard.

**Dr Dimitrov:** From an EMS perspective, our remaining challenges are twofold. First is the general public and the pressing need for awareness campaigns like FAST Heroes in schools, but also for adults to learn how to recognise stroke symptoms and immediately call 112. Second is to increase the awareness and qualifications of our EMS colleagues through joint theoretical and practical trainings with our hospital colleagues.

**Dr Manolova:** In a perfect world, I would change the motivation that neurologists have for treating stroke. I would rearrange their priorities so that they are more engaged in the timely intervention in stroke.

**Dr Kristiyan Naydenov:** I dream of a reality where for every doctor there are two nurses and four porters, as is laid down in the national legal standard. But we have realised that we must rely on ourselves. Our entire team is working to address all the problems we can through education of new cadres and through public outreach. Our motivation is the team that we're in.



Head nurse Neli Dimova.

# MonitorISA

## The Italian Job

The quality monitoring concept that inspired Angels Insights Month has been the catalyst for stroke care transformation in Italy. Angels consultants Elisa Salvati, Stefania Fiorillo, Linda Serra and Alessia Santori describe the evolution and impact of MonitorISA.

### Tell us about the conversations that preceded the concept for MonitorISA.

Back in 2019 we realized that only a few neurologists were actively monitoring their performance on common indicators using official quality monitoring registries such as the SITS registry. Most doctors only had "the feeling" that the stroke pathway was fast enough. Nobody believed they had the resources and the time to fill out the registry for every patient. We needed a plan to get all the stroke centers monitored at the same time, on the same indicators. We took inspiration from the program developed by our colleague in Lisbon, Melhora quem sabe, which aimed to monitor all the stroke centers in Portugal once a year for 15 days. Our initial idea was to have one quality monitoring month a year, but after the huge success of the first edition, we decided to have it every May and November. Together with our National Steering Committee and with the endorsement of the Italian Stroke Association (ISA-All), we named the program MonitorISA and launched it during the national stroke conference in December 2019.

### The first edition (March 2020) coincided with the worst of Covid in Italy and elsewhere. Did you question whether the project could still be successful?

We were very worried that no one would participate because of Covid, so we were pleasantly surprised when more than 100 hospitals joined the first edition, and more than 2,000 patients were registered on SITS. That encouraged us

to launch a second edition in November 2020.

### How was the concept communicated to hospitals?

The Italian Stroke Association launched MonitorISA as a collaborative project between ISA-All, SITS and Angels. It was presented as an easy tool hospitals could use to improve their stroke care and compare their performance with that of other hospitals. It was important to share how user-friendly the SITS-QR template was, and to give them feedback on their results. Hospitals understood the need for a comprehensive picture of stroke care in Italy and that encouraged them to take part.

### Did the results of the first edition produce any surprises?

We discovered that some hospitals had a faster stroke pathway because of Covid. In fact, some hospitals that previously treated patients in the stroke unit and were now forced to treat them in the emergency department, were saving 10 to 20 minutes.

### What did you learn about stroke in Italy?

The first edition showed that there was a lot to work on, but there was a willingness to participate (108 out of 220 hospitals) and a desire for discussion. For the first time in Italy, monitoring was not just data collection but a reason to discuss and define common objectives. Despite this sense of belonging, we learnt how different the picture was from region to region and



From left, Stefania Fiorillo, Alessia Santori, Elisa Salvati and Linda Serra.

among hospitals in the same area. This confirmed that the treatment a patient received was still a matter of luck.

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Before **MonitorISA** we had no tools **to evaluate this data.**

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### Why were door-to-needle (DTN) and door-to-groin (DTG) times and dysphagia screening rates the primary focus of the project?

Our work as consultants had shown that time delays were a critical issue in Italy, as was patient management in the acute phase, where aspiration

pneumonia is a major complication of the failure to diagnose dysphagia. Before MonitorISA we had no tools to evaluate this data. Since the first edition we have set challenging targets: 30 minutes DTN, 90 minutes DTG, and 100% dysphagia screening.

#### How and where are the results of each edition shared?

Once the national SITS coordinator receives the report from the SITS team, Angels consultants organize regional webinars or workshops where the latest regional results are discussed and compared with previous editions. Each item is discussed and compared to the national results too. Stroke performance is analysed in relation to gender, age, type of stroke and NIHSS score, but especially in relation to: numbers and types of treatments, EMS pre-notification, door-to-imaging time, median DTN (expressed per treatment setting such as ED, angio suite, SU or CT room), median DTG, dysphagia screening, stroke care setting, discharge destination and type of rehabilitation, and three-month functional outcome. Very importantly, the latest MonitorISA report is also shared with all participants at the ISA-All national conference, which typically attracts about 500 attendees from all over Italy.

#### How did MonitorISA give rise to the launch of MonitorICTUS for EMS?

MonitorICTUS was launched in November 2021 with the aim to facilitate communication between pre-hospital and intra-hospital doctors and to compare the results of the two phases. We have had five successful editions

with edition #6 occurring in May 2024. To date, 22 EMS's have participated in MonitorICTUS of which 13 have won a total of 34 EMS Angels Awards.

#### Did the Treat At CT (TAC) project also grow out of MonitorISA?

The TAC Project emerged from MonitorISA as a project to encourage centers to change their pathway by applying one of the most efficient priority actions, which is to treat the patient at CT, and to monitor its impact during May and November. Once they start, many hospitals make TAC part of their protocols resulting in much reduced DTN times.

#### What are the key success indicators of this project?

More and more hospitals are reaching the quality criteria and winning ESO Angels Awards; hospitals that participated in all the editions of MonitorISA treat a greater percentage of stroke patients within 60 minutes, and those that treat at CT achieve a DTN of around 40 minutes across editions.

#### When consulting a hospital, how important is it to get them on board with MonitorISA?

Quality monitoring is a key aspect of the consultancy process. Participation in MonitorISA allows a hospital to have an overview of their stroke care pathway, and to benchmark and continuously review their performance. Signing up to MonitorISA signals a desire to improve their treatment pathway. The results will enable them to reflect on critical points in the pathway and identify which

remedial actions to implement. The variation in median DTN in relation to the treatment setting is a powerful tool to show the difference treating at CT can make.

#### What tactic is most effective for persuading a hospital to participate in MonitorISA?

We involve them in the process by sharing the importance of participating in the ESO Angels Awards. The awards help hospitals feel engaged and much more motivated. It's not surprising that most of the ESO Angels Awards are for Q2 or Q4 when the program takes place.

#### Does MonitorISA have a permanent place in stroke care in Italy?

There is every reason to believe that MonitorISA will remain a milestone in stroke care in Italy. It has become a habit for many people, a tradition of sorts. Many hospitals have participated from the start and the number of hospitals participating has increased. MonitorISA has been included in the Stroke Action Plan for Italy that was presented at the National Stroke Conference in April 2024, with the ambitious goal of 80 percent participation and with even stronger endorsement by the ISA-All.

#### What lessons arising from this project would you share with consultants elsewhere?

First of all, believe that it is possible! We received a lot of support from key opinion leaders who really believed in the project. Find them in your territories and they will make the difference.

#### LINDA SERRA

San Bortolo Hospital in Vicenza have always participated in MonitorISA but initially their treatment times were pretty high – 69-87 minutes for DTN and 114-125 minutes for DTG. Thanks to working together on increasing awareness of stroke, improving the collaboration between the various operational units and reviewing the protocols, by edition VIII their numbers met the ESO quality criteria. They received a platinum award in Q4 of 2023.

#### STEFANIA FIORELLO

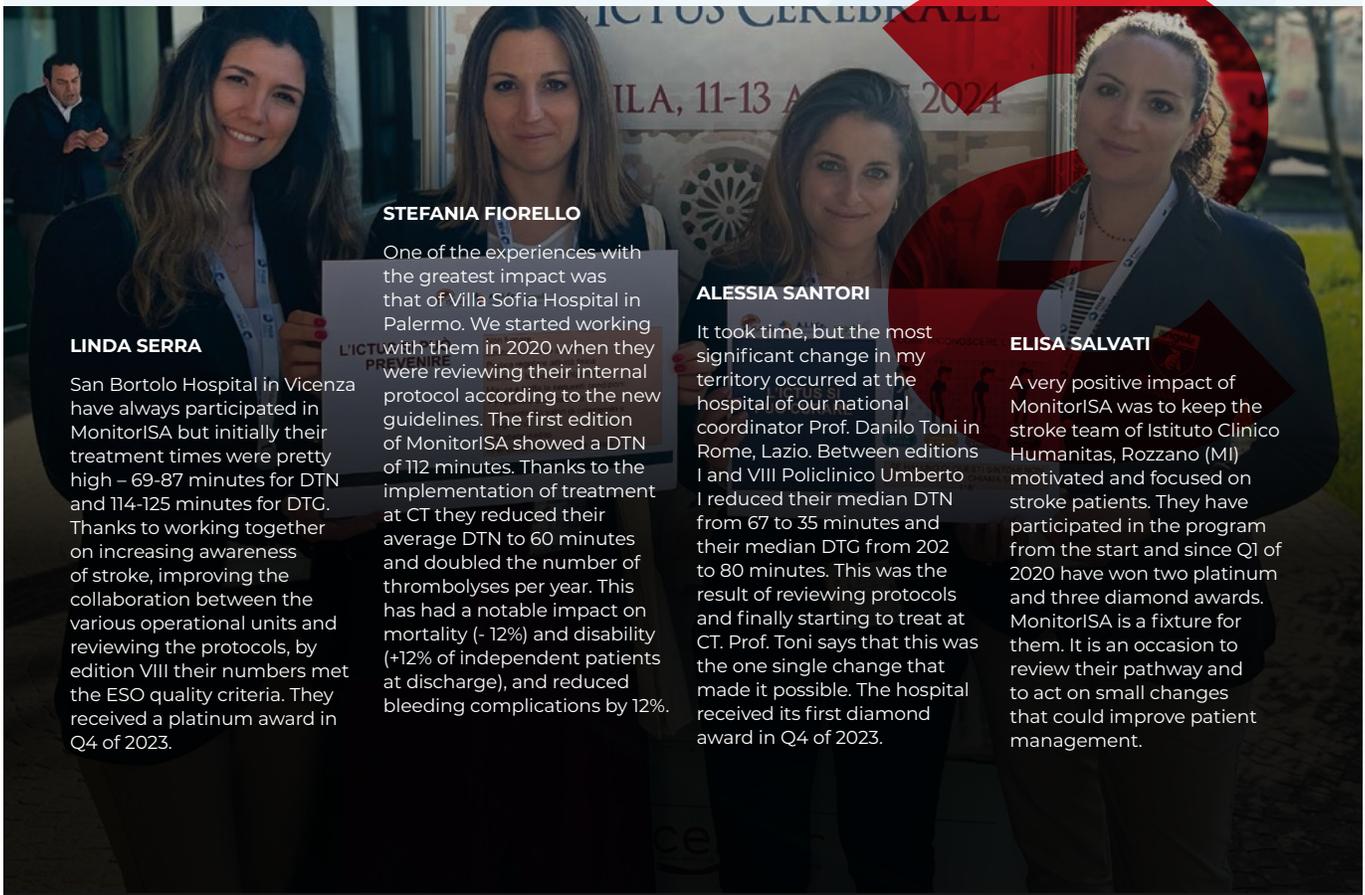
One of the experiences with the greatest impact was that of Villa Sofia Hospital in Palermo. We started working with them in 2020 when they were reviewing their internal protocol according to the new guidelines. The first edition of MonitorISA showed a DTN of 112 minutes. Thanks to the implementation of treatment at CT they reduced their average DTN to 60 minutes and doubled the number of thrombolyses per year. This has had a notable impact on mortality (-12%) and disability (+12% of independent patients at discharge), and reduced bleeding complications by 12%.

#### ALESSIA SANTORI

It took time, but the most significant change in my territory occurred at the hospital of our national coordinator Prof. Danilo Toni in Rome, Lazio. Between editions I and VIII Policlinico Umberto I reduced their median DTN from 67 to 35 minutes and their median DTG from 202 to 80 minutes. This was the result of reviewing protocols and finally starting to treat at CT. Prof. Toni says that this was the one single change that made it possible. The hospital received its first diamond award in Q4 of 2023.

#### ELISA SALVATI

A very positive impact of MonitorISA was to keep the stroke team of Istituto Clinico Humanitas, Rozzano (MI) motivated and focused on stroke patients. They have participated in the program from the start and since Q1 of 2020 have won two platinum and three diamond awards. MonitorISA is a fixture for them. It is an occasion to review their pathway and to act on small changes that could improve patient management.



# South Bohemia

## Becoming an Angels Region

The stroke network in South Bohemia is an example of how seamless cooperation between hospitals and ambulance services saves lives. With one more hospital to qualify for an award, and high-level advocacy for the FAST Heroes campaign, this southern part of historical Bohemia is on its way to being named one of Europe's first Angels Regions.



An Angels Region is one in which community awareness, EMS partnerships and acute hospital care are all optimised to deliver better outcomes for stroke patients. But this can only be achieved if everyone acts in unison. That's the power of 100 Angels Regions – it sets one goal for everyone and transforms collective goodwill into shared purpose.

In the Czech Republic, Angels consultant Martin Liptay is optimistic that South Bohemia will be among the first in Europe to achieve Angels Region status. There is no shortage of collective goodwill in this region saturated with history and culture and dotted with ponds and rustic Baroque-style villages. Its population of just over 600,000 is served by three stroke centres namely Hospital České Budějovice (a comprehensive centre located in the regional capital), and primary stroke centres in the towns of Písek and Jindřichův Hradec. This network places every citizen in the region within an hour's reach of acute stroke care, with under 50 km separating the primary

centres from the capital. Emergency transport is provided by the ZZS Jihočeského kraje (the EMS of South Bohemia), under the directorship of Dr Marek Slabý, who is one of three exceptional leaders steering the region towards success.



**Dr Svatopluk Ostrý**

Dr Svatopluk Ostrý became head of neurology at Hospital České Budějovice in 2015, having arrived there in 2012 after 11 years at the celebrated Central Military Hospital in Prague. He'd moved to South

**The 100 ANGELS REGIONS** strategy is a bold plan to make the world safe for stroke. It is a regional approach that mobilises different actors around a single mission – to deliver better outcomes for stroke patients.

Bohemia to change his professional and personal life, he says. "Here was a large hospital in quite a big city but not as big as Prague. Prague was too large for me, I needed something smaller."

Here, too, was an opportunity to start something new, to tackle another big topic that was nevertheless connected with his years as a neurophysiologist in a neurosurgery team.

"So it was in connection with changing my professional life and improving my personal life," he says. In the pursuit of these goals he turned his hospital into a landmark for stroke care, treating more patients with thrombolysis annually than any other facility in the country, with a median DTN time between 15 and 18 minutes, carrying out the second-highest number of mechanical thrombectomies per year, and winning three ESO Angels diamond awards.

This level of performance is rooted in daily practice, Dr Ostrý explains. "It is about reviewing every case, every day, going over it again and thinking about ways it could have been better."



When he arrived in South Bohemia 11 years ago, changing mindsets about stroke required some "passionate" discussion, he says. "We had to convince people to think about stroke patients differently – to try to look at each case as an opportunity to help them, to recognise that when a stroke patient comes in, we are here to change their fate. And that if we decide quickly what to do, and then do it together like one man, we can help them more."

Dr Ostrý grew up in northern Moravia in eastern Czechia and attended a school where the focus was on mathematics and science. Most of his school mates went on to study economics, maths and physics; Svatopluk Ostrý was among the few who chose medicine as their career, attracted by the potential for using knowledge to impact lives.

Neurosurgery offered the possibility for logical argument, quick decision-making and direct action, and he has found similar characteristics in stroke care. His research focuses on implementing neurophysiology into diagnostic process in acute stroke and exploring a third option for treating acute ischaemic stroke, namely removing clots via microsurgery in cases where mechanical thrombectomy has failed. His joint output with his colleague, renowned neurosurgeon Dr Jiří Fiedler, has brought the world's attention to the trailblazing work being carried out at their hospital.



### Dr Robert Rezek

Dr Robert Rezek is lead physician of the stroke unit at Hospital Písek, a primary centre located in the town of Písek about 45 minutes north-west of České Budějovice. Hospital Písek is one of the Czech Republic's 40 diamond hospitals, a distinction it achieved for the second time last year. Its average DTN time is a first-rate 17 minutes.

When Dr Rezek came here from Prague about 13 years ago, a stroke care system was already in place but it was following Dr Ostrý's intervention at České Budějovice that cooperation with that centre improved and stroke patients in the region could receive high-level comprehensive care, he says.

"Previously we were unable to provide quality care to patients with large vessel occlusion. However, since 2013 the whole stroke team at České Budějovice changed and now our

cooperation is perfect and the rate for mechanical thrombectomy has increased dramatically."

Perfect cooperation between primary and comprehensive centres hinges on a well-trained ambulance service not only capable of transferring patients between centres as efficiently as possible, but also able to select the right patient for the right hospital.

Educating paramedics improves the whole system, Dr Rezek points out. To that end he became a student himself in the autumn of 2022 when he joined an Angels-facilitated advanced stroke life support training workshop in Budapest to become a certified ASLS instructor.

The 18-year-old Robert Rezek who decided to become a doctor did so from an impulse to "help people and improve the world". Becoming a neurologist was just his good fortune, he says – a sequence of lucky coincidences that brought him from Prague to Písek to help this hospital improve its stroke care programme and help develop South Bohemia as a safe place for stroke.

His first priority after he arrived in this historic town was to change the logistics for the patients, Dr Rezek says. "Previously, the team met the patient at the ambulance and a physical examination was completed before the patient was transferred to the CT room. This took time. Now, with better selection by the paramedics, we're ready for the patient before they arrive and we receive them in the CT room."

Treating the patient at CT cuts more precious minutes from the door-to-needle time.



### Dr Marek Slabý

"Transferring patients directly to CT was a huge step towards reducing treatment times," says Dr Marek Slabý who, as well as leading the ZZS Jihočeského kraje, is president of the National Association of EMS and represents the district Tábor in the Senate of the Czech Republic. He has mastered the art of switching between his many roles and finds that his experience as a politician increases his understanding of the connections between health and social issues.

Standardised cooperation between hospitals and ambulance services has had a significant impact on treatment times, Dr Slabý says. He was involved in discussions leading to the formation of a stroke network in Czechia, and

is satisfied that disabilities as a result of stroke are decreasing as a result. Defining the stroke centre network and putting in place rules for triage was a massive jump forward in stroke medicine, he says.

"After rules for effective communication and triage to the correct hospital were agreed upon with the stroke centre in České Budějovice, all the key parameters improved drastically and patient transport to small non-treating hospitals was almost completely eliminated."

The EMS awards have also had a positive impact on prehospital stroke care quality thanks to the feedback derived from the collection and analysis of patient data. "It is important for people to see what they do matters," Dr Slabý says.

The ZZS JčK, which won its second diamond award in Q3 of 2023, must enter the awards again in 2024 if they are to meet the criteria for Angels Region status.

### Recruiting heroes

Becoming an Angels Region should be a matter of course in a context where physicians such as Drs Ostrý, Rezek and Slabý are providing leadership in all aspects of stroke care. They are soon to be joined by Dr František Pfeifer, chief neurologist at Hospital Jindřichův Hradec, the newly certified stroke centre in a historical town 42 km north-east of České Budějovice.

This hospital would have gained award status before now but for its failure to standardise and document dysphagia screening. Martin Liptay is working with Dr Pfeifer on implementing a standardised protocol for the basic water swallow test and making sure it is consistently tracked so the data can be transferred to RES-Q with the ultimate goal of implementing the GUSS dysphagia screening protocol.

On Martin's to-do list besides helping Hospital Jindřichův Hradec win their first award and having the EMS add another to their trophy cupboard, is expanding implementation of the FAST Heroes campaign.

In order to meet the criteria for Angels status, the region needs to enrol the target number of children in the schools-based awareness campaign. The campaign tasks each child with educating two grandparents. The implementation target is therefore based on stroke incidence (number of strokes per population) divided by two. The South Bohemian region needs to recruit at least 700 little superheroes to reach this goal.

The FAST Heroes campaign has received a boost from Dr Ostrý signing on as ambassador, and Martin is hopeful that more leading citizens will lend their influence to the project. Collective goodwill will take care of the rest.



# Getting ahead by getting started

For Castilla y León in northwestern Spain, the road to becoming an Angels Region begins with nurses.



**CASTILLA** y León combines two ancient kingdoms with centuries of history to form the largest of Spain's 17 autonomous communities. The sum of nine provinces, it is bigger than both Hungary and neighbouring Portugal, but its 2,4 million inhabitants, thinly distributed across an area almost one-fifth the size of Spain, account for less than 6 percent of the population.

Red wine lovers around the world know the region for its famous Toro wines produced in the province of Zamora – such robust reds that when Columbus sailed westwards looking for a passage to India, one of his three ships was half filled with Tinta de Toro with which to wash down the dried cod and hardtack biscuits.

Despite a climate locals describe as “nine months of winter and three months of hell” the people of Castilla y León are gifted with longevity, easily outliving the median onset age for stroke by a good number of years. But low stroke awareness puts them in peril. Local hospitals, of which there are plenty, will see approximately 4,500 stroke patients per year. Of these, around 44 percent will arrive under their own steam, having failed to recognise either the signs of stroke or the importance of calling an ambulance.

There are four comprehensive centres in Castilla y León, three of which are also the only hospitals in the region that have so far met the criteria for ESO Angels Awards. For the region to achieve Angels Region status,

consultant Esther Redondo has to convert eight more hospitals to gold, help the emergency services reach a minimum of gold in the EMS Angels Awards, and enroll at least 2,000 elementary school children in the FAST Heroes stroke awareness programme. Only then can it be deemed a safe region for stroke.

“Hopefully by the end of next year,” Esther says, recognising that an elephant of this size will have to be eaten one bite at a time.

But (as Mark Twain said) the secret to getting ahead is getting started. Esther kicked off her regional strategy on 8 March with a large gathering of nurses



**We have the same goal – to optimise stroke networks as much as possible.**



in Valladolid, the region's unofficial capital city. The goal was to improve post-acute stroke care, not only through an agenda focused on best practice and data-driven improvement, but by creating a forum for the exchange of experiences and ideas.

If attendance equals commitment, the Stroke Nursing Work Session at the Hotel Recoletos was off to a promising start. Two nurses each had been invited from Hospital de Burgos, Hospital Santos Reyes and Hospital Santiago Apóstol in Burgos, from Hospital de Benavente and Hospital Virgen de la Concha in Zamora, Hospital de León and Hospital del Bierzo in León, Hospital Soria in Soria, Hospital Río Carrión in Palencia, and Hospital Hospital de Medina del Campo and Hospital de Salamanca in Valladolid. These were all hospitals equipped with dedicated stroke units, or hospitals that admitted neurological patients despite not having a designated stroke unit, Esther explains.

Mortality rates are four times lower for stroke patients who receive stroke unit care, Esther says, citing a 2020 study of organised inpatient care for



stroke. Getting to gold isn't only about reducing treatment times in the hyperacute phase of stroke but also about raising the standard of post-acute care. "The role of nurses is really key here," she says.

For the workshop on 8 March, no-one declined the invitation and everyone showed up, some after a journey of over 250 km. Also present was Laura Fernández Concellón, a former emergency medicine physician who in 2023 became regional health manager for Castilla y León.

The involvement of political decision-makers is crucial for regional conversion and to drive positive change within healthcare systems, Esther says. Dr Concellón was not only an enthusiastic participant in the workshop but had asked to open the event in order to demonstrate the political commitment to stroke care improvement.

Esther says: "We have the same goal – to optimise stroke networks as much as possible."

A highlight of the event was a presentation on integrating quality monitoring into practice by María Jesús Canal of the University Hospital of Salamanca, which has become renowned for its comprehensive monitoring of stroke patient care.

Sr Canal's presentation demonstrated through insightful data analysis the evolution of care practices and how they used numerical data to pinpoint areas for improvement.

Esther says, "Her presentation resonated deeply with all the attendees as it underlined the critical role of quality monitoring in shaping patient outcomes. It reinforced the need for healthcare professionals to embrace quality monitoring actively, and illuminated how leveraging numerical insights can lead to tangible enhancements in patient care, ultimately improving outcomes and experiences for stroke patients.

What made it even more meaningful was that the story of quality monitoring at the University Hospital of Salamanca had a distinctive beginning.

In June 2023 Sr Canal and her colleague Paula Isabel Galache attended an Angels Day where a nurse from a different region explained why and how measuring performance had a positive impact on stroke care. They were impressed and when Esther encouraged them to implement it at their own hospital, they were keen to try.

"I knew they had the potential," Esther says. "They're an engaged, motivated team and they receive a high number of stroke patients."

Quality monitoring has since become part of daily nursing practice at the University Hospital of Salamanca and will be the subject of a paper at the next National Nurse Neurological Congress. It is no coincidence that since last June this hospital has won two consecutive gold awards.

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Once someone is eager to follow the advice you gave them, you are building trust and it becomes easier to work together.

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Quality monitoring is at the heart of the changes Esther hopes to see at hospitals represented at the event. "I expect them to change the way they work," she says. "I expect them to implement regular data collection and analysis protocols to monitor key metrics that define patient outcomes.

"I would like them to introduce quality improvement changes based on data and not feelings or opinions – and finally I'd like to see a culture of continuous learning and professional development that will enhance the working relationship with others in the stroke care chain.

"This is too often overlooked, but data collection will help foster the sense of being part of an unstoppable team."

Her strategy for sustaining the momentum the event generated is to focus on motivation. "That's where everything starts," she says. "Once someone is eager to follow the advice you gave them, you are building trust and it becomes easier to work together."

Her next date is with a hospital where she will congratulate them on their results in RES-Q and complete a survey of what and how to improve. The point, she says, is to create a sense of awareness and control of their pathway, in addition to showing them how to use their data.



An even bigger date is Friday 4 October, when the next Stroke Nursing Work Session will take place. Dr Concellón has already indicated she will attend – her enthusiasm for collaborating with Angels is something Esther hopes will translate into additional resources and high-level support for implementing changes.

The positive impact of the first event could materialise in several ways, Esther says. These may include introducing new practices and improving existing ones; increased awareness and commitment, and collaboration between institutions thanks to networks established during the event.

She says, "The best outcome would be to witness a real impact on stroke patient care in the region, with significant improvements in care quality and positive outcomes for patients, that can be sustained over time."



# Sapucaia do Sul

It takes a city

It was a big night for a small city when Sapucaia do Sul officially became the world's second Angels City.

**IT'S MONDAY NIGHT, 25 March 2024, and Cecília Braga dos Santos is giving the performance of her life. A packed auditorium claps along as the 79-year-old stroke survivor sings "Rosa Branca", a Brazilian song about suffering, love and life.**

Donna Cecília had a stroke while taking singing lessons. She was rushed to the only hospital in her city where doctors gave her a second chance at life. Tonight she has the chance to thank them by sharing her gift on the stage.

Next to her behind a raft of balloons and watching her sing with a smile on his face, is Dr Diógenes Guimarães Zân, for whom this occasion represents the pinnacle of his academic and professional life.



Everyone who heard Cecília Braga sing on 25 March had helped turn Sapucaia do Sul into an Angels City.

Tonight, he is happier than he has ever been, thanks to the achievement of "an apparently impossible title".

"This title was not granted to city with a large and resourceful university," he says in an attempt to quantify its significance. "This title was granted to a small town where the only hospital is a municipal hospital without great resources that through the organization of care processes and engagement of people has managed to achieve a title of giants."

The small city with the title of giants is Sapucaia do Sul, located 30 km north of Porto Alegre in southern Brazil, where Dr Diógenes leads the award-winning stroke team at Getúlio Vargas Municipal Hospital. It was largely thanks to his enthusiasm for changing stroke care in his city that Angels team leader Kamila Fachola chose Sapucaia do Sul to pilot a new strategy for stroke care transformation.

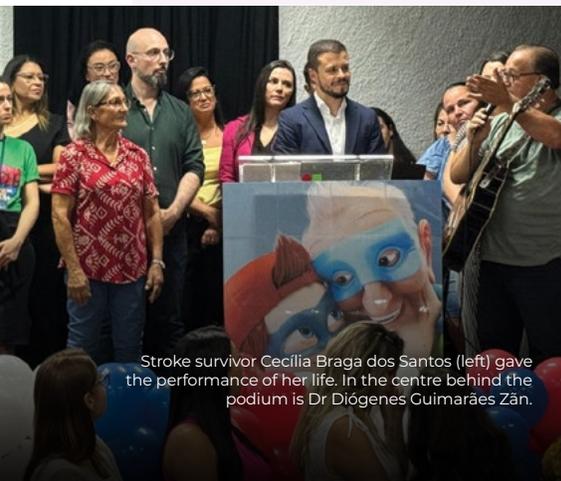
She had already converted Ribeirão Preto, a medium-sized city located in São Paulo state that became the first in the world to earn the status of Angels City. To achieve this designation, a city has to meet specific targets for public awareness education, emergency transport and acute care for stroke.

With Getúlio Vargas Municipal Hospital having already won a WSO Angels Award, Sapucaia do Sul was one third of the way there. They would be carried across the finish line by collective goodwill and social mobilisation, local government support, a first-rate EMS, and a neurologist with a passion for process management and an understanding of Newtonian physics.

### 'Newton was right'

Diógenes Guimarães Zân grew up in a humble household with a solid work ethic. As a book-loving teenager he worked at a car wash, an experience that equipped him with the ability to deal with all kinds of people and sparked his appetite for a job well done.

Medicine was "the priesthood he chose" – committing to a lifetime of service for the benefit of patients. After six years studying medicine, three years of neurology, one year of vascular neurology, two years of interventional neuroradiology and two more years to obtain a master's degree, he is not only his family's first doctor. He is a medical professor at the University of Vale do Rio dos Sinos and neurologist and stroke specialist at Getúlio Vargas Municipal Hospital where he became

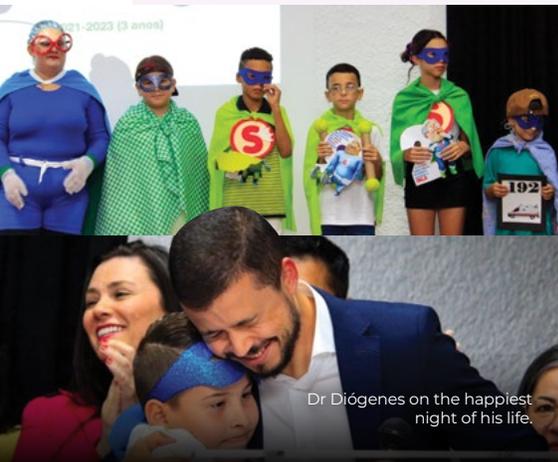


Stroke survivor Cecília Braga dos Santos (left) gave the performance of her life. In the centre behind the podium is Dr Diógenes Guimarães Zân.

coordinator of the stroke pathway in May 2021.

Between 2018 and 2020, intra-hospital mortality from stroke at this hospital had peaked at rates above 15 percent. By the end of 2023 it was down to 6,2 percent, the result of a process of training and process optimisation during which Dr Diógenes learnt that the greatest adversary of change was the one described by Newton's law of inertia.

It's the stubborn power of "it has always been this way", he says. "Isaac Newton was right when he stated that the tendency of any object is to maintain its movement or to remain at rest. Modifying hospital processes, and convincing and encouraging people are very difficult stages of any positive change."



Working with Angels to reorganize an entire city's healthcare network expanded the priesthood considerably, but Dr Diógenes was not alone. Among those who embraced the project was Leticia Santomé, local head of the emergency service SAMU who during 10 years of emergency nursing encountered many stroke patients who "marked her hard".

For Sapucaia do Sul to become an Angels City, SAMU had to win gold in the EMS Angels Awards and the first problem they had to confront was that they did not know how good they were.

"I was concerned about our data," Leticia says. "We weren't keeping accurate records of our cases and our team needed more knowledge about the fundamental role that prehospital care has in the outcomes for stroke patients.

"We held a team meeting where we outlined our new response time goals, more accurate indicators and the information that couldn't be missed

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They were witnessing another law of motion – the power that is generated when everyone changes direction and accelerates together towards a common goal.

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at the time of care. It took a month to finetune the details and to standardize the service. Training was provided by Dr Diógenes who also promoted the integration of the whole process of patient care and facilitated the relationship between institutions.

"After one month, a review of the data and process confirmed that care for patients affected by stroke had become faster and more effective."

By the end of 2023 SAMU Sapucaia do Sul knew how good they were, only to discover that they were even better. After submitting their data to be considered for an EMS Angels Awards they learnt that they had overshot their target, joining their colleagues in Ribeirão Preto as the only EMS companies in Brazil to meet the criteria for a diamond award.

### A night of giants

Everyone who heard Cecília Braga sing on 25 March had helped turn Sapucaia do Sul into an Angels City – including those invested with the power to change the rules whose support is indispensable to the Angels Cities strategy.

The mayor, Volmir Rodrigues, made a speech in which he dedicated the award to the population. The municipal secretary of health, Flávia Motta, observed that people from different disciplines working towards a single goal had enabled the city to save more lives. Djoicy Felipin who heads the secretariat of health commended the city's teachers and students for "coming together in favour of life". Implementation of the schools-based stroke education programme, FAST Heroes, was now mandatory for third-graders in the municipal network and 200 teachers had already been trained to familiarise around 4,000 students with the signs of stroke and the importance of calling 192.

They were witnessing another law of motion – the power that is generated when everyone changes direction

and accelerates together towards a common goal. To produce this kind of energy – the kind that makes change contagious – Dr Diógenes leveraged his understanding of business process management (BPM), a discipline about which he is passionate.

Getúlio Vargas Municipal Hospital received no additional resources for improving its stroke care, he says. "BPM made a difference because it involves saving resources by optimizing processes that involve a particular purpose. Processes and steps that are not as useful or that are more time-consuming have been replaced by ones that are simplified, faster, assertive, and less costly."



By the end of 2023 SAMU Sapucaia do Sul knew how good they were, only to discover that they were even better.

The application of BPM to organizing the stroke pathway is the topic of Dr Diógenes's PhD thesis, which is being supervised by Prof. Sheila Martins, past president of the WSO and founder and president of the Brazilian Stroke Network. Prof. Martins also supervised his master's thesis, and her presence in the auditorium on the happiest night of Dr Diógenes's life was of great significance.

It elicits yet another Newtonian reference: "If I have seen any further than others, it is by standing upon the shoulders of giants."

# A consultant's story

## Water wears away stone

On her 31<sup>st</sup> birthday Fransisca Elisabet was browsing on LinkedIn when a vacancy caught her eye. “Babe, this job is too cool!” she immediately wrote to her husband. Here, the newest Angels consultant in Indonesia shares the story on either side of a day that now seems like destiny.

IN 2017 I attended my first patient after graduating from medical school. A woman of middle age had been brought to the emergency room of a hospital in Balikpapan in East Kalimantan, after suffering a left hemisphere stroke. Her son, looking pale and confused, tried to remain calm as he watched his mother receive care. He was still in middle high school, and his father had already passed away.

I was a general practitioner back in the day, a passionate one. It had been my childhood dream to become a doctor so I would be able to treat my parents if they ever got sick. Now I would often spend upwards of 20 minutes conversing with my patients and learning about them. I firmly believed that educating patients about their conditions, management strategies, dietary habits, and exercise routines was essential for them to lead longer, healthier lives.

In 2020, my husband Wilsen and I were blessed with a son, and with the onset of COVID-19, I chose to take a break from my practice to protect my child from the virus. After about nine months, I knew that I still wanted to be a doctor, so I moved 1,600 km from Balikpapan on the east coast of Borneo to Bandung on the island of Java, to take up a neurology residency.

Neurology to me is the most complex and yet the most beautiful system in our body. I was always reminded of the glory of our Creator every time I learned about it.

I worked as a research assistant in the Neurology Department at Padjadjaran University in Bandung to build networks and gain experience. I contributed to clinical trials that focused on mapping the causes of neuroinfectious cases in Indonesia to improve neurologists' approaches and treatments.

After two years, I finally took the test. But when I looked on the admissions website the day the results were announced, I discovered that I hadn't been accepted.

I felt low for a few days, but then another opportunity came my way. It was with a big life-science company, a state-owned enterprise in Indonesia, where my role was to provide scientific reviews of new life-science products that could be brought into the country, and how they could improve the quality of life.

It was here that I realised my vision: to provide the best care and treatment for patients in need.

I was however looking for something more, something different. And on



Team Angels Indonesia.

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Looking back, it is clear to me that it was not a mere coincidence; **it felt like destiny.**

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13 November 2023, the day I turned 31, I was just casually scrolling on LinkedIn when I found it. The job title was Market Access Specialist, but it was the description that caught my whole attention: “Every 30 minutes, a

stroke patient who could have been saved dies or is permanently disabled because they were treated in the wrong hospital. Our mission is simple. To increase the number of patients treated in stroke-ready hospitals and to optimize the quality of treatment in all existing stroke centers."

I forwarded the job posting to Wilsen, saying, "Babe, this job is too cool! I'm applying for it, okay!"

Looking back, it is clear to me that it was not a mere coincidence; it felt like destiny. By then, Wilsen and I had been in a long-distance marriage for three years, only seeing each other for about a week every three to four months. He's a geologist and has to be near the site when a new well is being drilled. Whenever he had to leave, our son cried.

This new position not only allowed me to return to Balikpapan to be with my husband; it was a role in which I believed I could make a bigger impact on society. Even though I hadn't in the end pursued a career in my medical profession, I knew that all I had learned and experienced wouldn't go to waste.

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Water can wear away stone,  
drop by drop.

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I received a warm welcome from my team on the day I joined Angels. They took me out for lunch and very quickly made me feel part of a remarkable team.

During my first week, I completed the New Consultant Pathway training on the Angels website. I was amazed at how well-prepared the courses were, and how comprehensive the material designed to facilitate our transition to becoming Angels consultants.

In my second week, I had the chance to participate in a code stroke workshop for one of the biggest private hospital chains in Indonesia, the Hermina Group. I realized the training was primarily aimed at the hospital crew, but I found myself taking notes and learning so much from all the speakers.

Later on, I had the opportunity to meet a neuro-champion from a diamond award-winning hospital in Jakarta. Dr Peter Gunawan from Siloam Hospital Jakarta (TB Simatupang) generously shared insights about their success and about the importance of team support. He enthusiastically explained that when Code Stroke is activated, everyone is on high alert. The pharmacy team promptly delivers the stroke bag to the CT scan area and the radiographer ensures the CT scanner is operational and ready.

Dr Gunawan also detailed their protocol for treating patients at the CT scan, which they started last year. Previously they treated patients in the ER but treating at CT enabled them to cut more door-to-needle time. In fact, they have published a paper about doing thrombolysis in the ER vs. in the CT scan room, and there was a significant difference in outcomes!

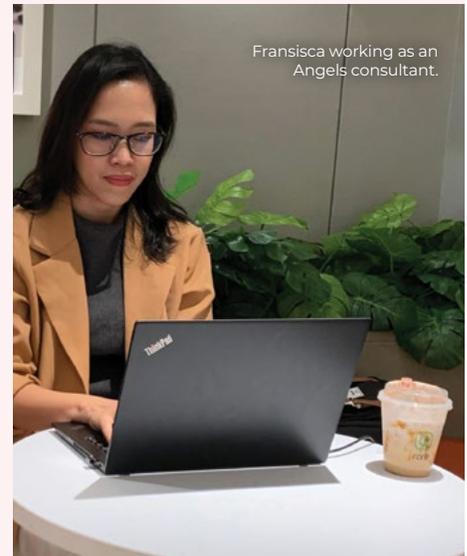
I will definitely share this experience with other hospitals that I collaborate with, especially those hesitant to administer treatment in the CT scan room, emphasizing that every second is crucial. I will also share an insight about quality monitoring that I came across in the course of my new consultant training – that you cannot improve something you don't measure.

I have already learnt some things about myself in my new role. I know that I am an extroverted person, but I have discovered that I enjoy working from home more than from an office, because I can work at my own pace and rest when I need to.

I am also finding my ability to make small talk with strangers unexpectedly useful – like the time I



At a code stroke workshop in Jakarta



Fransisca working as an Angels consultant.

struck up a conversation with a fellow passenger on a flight and discovered he was a senior neurologist in Balikpapan who later helped me reach out to other neurologists in the area.

I know that engaging with hospitals and their personnel can be challenging, and that I may encounter resistance or skepticism. But there is a saying, "Water can wear away stone, drop by drop." That is how it works and I'm going to apply it whenever I face challenges.

In the end, I am grateful and honoured to be part of the Angels team and to strive together to give life a chance.



Fransisca as a GP before she became an Angels consultant.

# Crossing borders in South America



Last year, Andrea Torres Narváez, an experienced Angels consultant in Colombia, spent three months immersing herself in the challenges and opportunities facing stroke care in neighbouring Peru. This is what she learnt.

I have had the pleasure of being part of the Angels Colombia team since its inception in my beautiful country. Therefore, I have witnessed its entire evolution.

At the start of 2023, everyone in the Angels Colombia team outlined their development plan and objectives for the year. Encouraged by my team leader, Andrea Correa, who inspires us to explore new avenues, I proposed the idea of conducting a BI-Baton, or knowledge exchange and support initiative, with the team in Peru. BI-Baton is a program that allows us to explore other positions or areas in our company and usually lasts about three months.

At the time the team in Peru was in need of additional support to continue growing. I saw an opportunity to create an innovative work plan that

would continue to add value after I left, and I was interested in making the application of the Angels project in a health environment that was different from Colombia, part of my development plan.

The proposal was brought to the attention of Deborah Ferreras, the leader of Ropu South America, and Sol Plamenatz, then leader of Angels Peru, and it was approved.

I didn't know anything about Peru except what had been shared at some regional meetings. I immediately began the process of learning about the country's healthcare system,

identifying opportunities and laying the groundwork for several ongoing projects in Peru.

Through online reading and research and from interviews with the local Angels team I learnt that one of the main differences between Colombia and Peru is that under the Colombian health system, while it's both public and private, coverage is universal, and everything operates under the same rules. By contrast, Peru has seven subsystems that operate independently. Coverage is concentrated in the capital city of Lima and in other cities there are many deficits in the healthcare system –

unlike in Colombia where we work with 236 institutions in 45 cities.

Among the achievements during this three-month Bi-baton, we accomplished the following:

- We secured an agreement with RIMAC Insurance, Peru's largest insurer, to train and certify all its pre-hospital staff. This company boasts the largest fleet of ambulances in the country. As a result of this agreement, which was reached with the invaluable support of Dr Fredy Garzón, Peru will become the first country in South America with certification for prehospital care.

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The people are friendly and generous, and the food is delicious.

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- We provided training and certification for all nursing staff at the Anglo-American Clinic in Lima where the nursing supervisor and emergency manager Julian Fernandez gave us his unwavering support. This hospital was selected because it was already part of the Angels process, but training had been postponed due to budget constraints. We expect that this intervention will increase the rate of treated patients and that improved performance will lead to the institution being certified.

- We initiated an Angels consultancy at Ate Vitarte Hospital in Lima where emergency physician Dr Willy Linares was particularly welcoming and

dedicated. This is a new hospital in the public network located on the periphery where it serves the most vulnerable population in terms of socioeconomic level.

Although a lot of the work was done remotely, I had one week of in-person engagement during which I met with RIMAC to finalize the training agreement for the entire EMS team and the creation of quality indicators; met with the country's largest imaging company to involve them in the stroke care improvement process, and was involved in training approximately 200 nurses.

Peru, a country of remarkable beauty, embraced me warmly. The people are friendly and generous, and the food is delicious. I was impressed by how clean and organized Lima was, and by the citizen culture – the sharing of social and cultural experiences that provides a sense of community.

Peru's complex healthcare system poses challenges for establishing stroke networks. However, this complexity also presents numerous opportunities to implement Angels and reshape the narrative of stroke, offering patients a second chance at life.

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Sending heartfelt hugs your way!

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For me, this experience marked significant personal and professional growth. It involved navigating



Andrea Torres (right) and Sol Plamenatz with nurses from the Anglo-American Clinic in Lima after completing their stroke nurse certification training.

a different healthcare system, understanding a distinct culture, and grappling with diverse norms and health policies, making the implementation of Angels in Peru a rewarding challenge.

During this project I realized that my communication skills were helpful for overcoming resistance. This strengthened my self-esteem and made me feel confident that I am doing a good job.

The experience has also allowed me to realize that in Colombia we have no excuse for not having stroke networks or stroke-ready hospitals thanks to the advantages of a healthcare system that empowers institutions.

To the current Angels team in Peru, I wish you a prosperous 2024 filled with growth and accomplishments in the service of patients. I hope that the seeds I've planted will soon yield fruitful results.

Sending heartfelt hugs your way!

I am deeply grateful to Andrea Correa, Sol Plamenatz, and Deborah Ferreras for allowing me to embark on this incredible journey, supporting teams in another country. May this experience mark the beginning of continued collaboration, transcending borders, and knowing that we always have each other's backs.



# Giving life a chance.

