

# The ANGELS Journey



100 REGIONS | DECEMBER 2027

ISSUE 2026 | 1



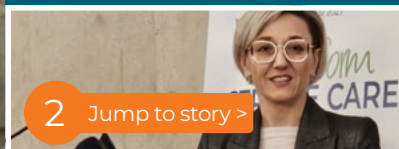
## Inside this issue



1 Jump to story >

### CHECKLIST FOR CHANGE

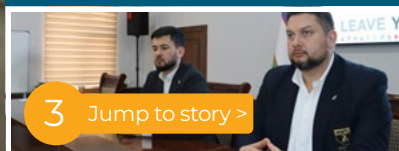
Standardizing ICH care bundle implementation



2 Jump to story >

### CHALLENGE ACCEPTED

Croatia has its first Angels Region



3 Jump to story >

### PROGRESS AND PARTNERSHIP

Vision becomes strategy in Uzbekistan



Scroll down or click on the arrows to keep reading



100 REGIONS | DECEMBER 2027

## Call to action

# Welcome

Across our network, we've seen again and again how clarity, coordination and courage can transform stroke care.



This month, that spirit turns toward one of the toughest challenges we face: **intracerebral hemorrhage (ICH)**. With the launch of the **Angels ICH Program**, we are stepping into a new era of possibility — one built on evidence, teamwork, and the belief that even in the hardest conditions, improvement is always possible.

Over the years, acute ischemic stroke has taught us something powerful: **if you measure the right things, change follows**. Thrombolysis rates and door to needle times — these indicators didn't just track performance; they revealed how strong and coordinated a stroke system really was.

In discussions with our expert advisory committee, we recognized a similar opportunity in ICH. Just as thrombolysis is the "litmus test" for ischemic stroke quality, **blood pressure management** may be the most telling marker for ICH. A single question — *How quickly and consistently are teams bringing*

*BP under control?* — offers a remarkable window into the overall strength of the ICH pathway.

But of course, **ICH quality is not defined by BP alone**. The science is clear: improving outcomes requires implementing the **full ICH care bundle**, where each element reinforces the others.

That means:

- **Early intensive blood pressure lowering**
- **Rapid reversal of abnormal anticoagulation**
- **Strict glucose management**
- **Temperature control**
- **Timely neurosurgical consultation and referral**

These five elements are designed to work together — a coordinated bundle that delivers far more impact than any single action on its own. So, while BP will help us measure progress, our mission is to ensure that **every hospital can implement**

**the entire care bundle, reliably, rapidly, and for every patient, every time.**

To understand what our baseline is, we asked Prof Robert Mikulík to analyse RES Q data from more than **16,000 ICH patients**. The insights were revealing:

- **69%** of ICH patients captured in RES-Q arrived with systolic BP > 140 mmHg.
- Of those with high BP, **only 62%** received **IV antihypertensive treatment**.
- Of the treated patients, **73%** achieved a **target BP ≤ 140** after treatment.
- Only **24%** reached that target **within one hour**.

Their data also shows promising momentum: a **median 33 minute door to BP treatment time** and **around 70%** of patients receiving BP lowering therapy within 60 minutes which is already in line with WSO certification standards.



**ANGELS**  
Stroke **HEROES**

Inspiring the global stroke community

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This is exactly why the Angels will now apply the same strategy that delivered an astonishing 165 percent higher effect size than previously believed possible, in Fever, Sugar, Swallow (FESS) protocol implementation for post-acute stroke treatment. The strategy that I'm referring to is the activation of all **five Angels platforms — Consultancy, Standardization, Education, Community and Quality Monitoring**. Together, they will help hospitals master the ICH bundle, build confidence, reduce delays, and embed new habits that save lives.

As part of this strategy, we will soon introduce **ICH Quality Dashboards** to support benchmarking and continuous improvement. And inspired by the success of the Ischemic Stroke Awards, we are preparing to launch the **ICH Awards**, shining a light on hospitals that deliver excellence in a field where excellence is deeply needed.

ICH has long been associated with devastation — sudden, severe, and often hopeless. But the landscape is shifting. INTERACT3 proved that **timely, coordinated action changes outcomes**. RES Q shows that progress is both possible and already underway. And our global community shows, every day, what happens when people believe that improvement is not just necessary — but achievable.

And now, as we stand at the start of this new chapter in ICH care, this is the moment for all of us — every neurologist, every emergency physician, every nurse, every stroke team — to act.

Because the evidence is no longer ambiguous. **The ICH care bundle saves lives.**

Not one part of it.

Not some of it.

**All of it — implemented quickly, confidently, and in the right sequence.**

So here is our call to action for all your ICH patients:

- **Treat blood pressure aggressively and immediately.** Don't wait. Don't hesitate. The target is clear, the timeline is tight, and every minute of delay costs the brain dearly.
- **Reverse anticoagulation fast** when it's present — early reversal saves lives and prevents further bleeding.
- **Control blood glucose and temperature** with the same discipline we bring to BP management — because instability in either worsens outcomes.
- **And just as thrombectomy taught us the power of structured, standardized referral systems,** let's bring that same mindset to **neurosurgical escalation** in ICH. Clear triggers, clear pathways, clear decision criteria, clear communication strategies. No ambiguity. No lost time. A coordinated response that turns potential hopelessness into a predictable, lifesaving sequence.

If we do this — if we implement the whole bundle, not partially, not eventually, but **fully and immediately** — we will give those patients who had little hope before, a second chance at life.



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

## 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](https://angels-initiative.com)

### Inside this issue

1 **Global**  
ICH Checklist for change

2 **Croatia**  
Challenge accepted

3 **South Africa**  
Diamond rush

4 **Kazakhstan**  
'It depends on us'

5 **Uzbekistan**  
Progress and partnership

6 **South Africa**  
Grand mission accomplished

# ICH Checklist for change

Listen to this story on Spotify, Apple, or on the Angels website.



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New evidence that a combination of actions performed together can reduce death and disability in intracerebral hemorrhagic stroke (ICH) was a call to action for the Angels Initiative to devise a set of tools that supports and standardizes implementation.

HISTORY was made at the 1980 Winter Olympics in Lake Placid, New York, when a US ice hockey team composed of college-age amateurs defeated a Soviet team of seasoned professionals. Through sheer teamwork and belief, a group of second-tier talents had defied 1,000-to-1 odds to defeat the heavily favored, four-time defending gold medalists in a contest that would become known as the Miracle on Ice.

This iconic moment delivered sport's quintessential example of the whole being greater than the sum of its parts – a philosophical concept (often attributed to Aristotle) which highlights synergy and the idea that organized systems possess value beyond their separate elements.

This kind of synergy, namely the superior power of a group of things working together in a single, coordinated system, is at the core of a set of evidence-based, structured interventions associated with improved outcomes for patients with intracerebral hemorrhage (ICH).

## The ICH care bundle

Intracerebral hemorrhage is the most serious and least treatable form of stroke. Although it accounts for only 28.8 percent of all strokes, ICH is responsible for 45.6 percent of deaths and nearly half of all lost disability-adjusted life years (DALYs). But while the past three to four decades saw great strides

in the treatment of acute ischemic stroke (AIS), the fate of ICH patients remained largely unchanged, until the conclusion of studies such as the INTERACT3 clinical research project in 2023.



Madeline Bucher and Inês Carvalho **accepted a brief to create standardized tools** to support the implementation of the ICH care bundle in hospitals.



INTERACT3 showed that timely administration of a care bundle that included lowering of systolic blood pressure, strict glucose control, treatment of fever, and rapid

reversal of anticoagulation led to less disability, lower rates of death, and better overall quality of life.

These results were incorporated in the 2025 update of ESO and EANS guidelines for managing intracerebral hemorrhage that was released at ESOC in Helsinki. During the same conference, INTERACT3 lead investigator and WSO president-elect Prof Craig Anderson made the case for the care bundle in a panel discussion with Professors Pachi Moniche and Robert Mikulik that was initiated and recorded by Angels.

This discussion was the starting point for Madeline Bucher and Inês Carvalho after they accepted a brief to create standardized tools to support the implementation of the ICH care bundle in hospitals.

## A multi-platform strategy

Synergy also characterizes a strategy that has helped create a global community of more and improved stroke centers and stroke-

ready hospitals that should see more than 50 million stroke patients receive evidence-based care in Angels hospitals by 2030.

The Angels Initiative employs a multi-platform behavior change strategy consisting of five principles, namely consultancy, standardization, education, quality monitoring and community.

Like the ICH care bundle, this is an example of an organized system having impact beyond its separate elements. For the Angels strategy to succeed, none of the five principles can be excluded. All five platforms must be activated for behavior change to take place.

This includes scripting the critical moves in a process of standardization, equipping healthcare workers with skills and knowledge to provide the highest standard of care, instilling a culture of quality monitoring to track performance, and building a stroke community committed to excellence. Central to it all is the deployment of a field force of consultants to support every lever of implementation – all at the same time.

The five platforms amount to a structured, holistic approach to implementation that ensures every project is given the best chance of success.

## Scripting the critical moves

As Madeline and Inês set out to script the critical moves for implementing the ICH care bundle, they found themselves in a familiar gap between evidence and practice, where complexity is the enemy of change.

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Any fool can make something complicated.  
It is hard to make something simple.

”

New clinical discoveries are constantly adding to the complexity of diagnostic and therapeutic decision-making to the point where it exceeds the available time and cognitive resources. For this reason, convincing more hospitals to start treating stroke patients according to evidence-based guidelines means stripping away all but the most relevant information to provide clear, user-friendly recommendations that make the minimum necessary steps explicit, thereby removing the

barriers to implementation. In other words, you need a checklist.

Breaking down complex, high-pressure tasks into manageable steps can improve anything from airline safety to surgery survival rates. But getting from complex to simple is more easily said than done. In the words of entrepreneur Richard Branson, “Any fool can make something complicated. It is hard to make something simple.”

## Ask the experts

Tasked with creating tools to standardize and support ICH care pathway implementation, and with “as soon as possible” as their deadline, Madeline and Inês went to work shortly after ESOC 2025. They were reading, asking questions, and articulating new concepts.

Based in Germany and Portugal respectively, they checked in with each other regularly to compare notes and exchange ideas. And if they weren't sure they'd understood the material correctly, they appealed to experts including Prof Thorsten Steiner, chair of the European Stroke ESO ICH committee and of the guideline update, and ESO guidelines board co-chair Prof Diana Aguiar de Sousa, along with neuroradiologist Dr Jaime Pamplona and Dr Ana Nunes, both at the University of Lisbon.



The Angels steering committee meeting in May 2025.

The ICH pathway resembles the AIS pathway up to the CT room, where imaging will confirm (or rule out) the presence and location of hemorrhage. A confirmed diagnosis triggers the four steps of the ICH care bundle – early intensive blood pressure treatment, glucose and temperature management, early reversal of abnormal anticoagulation, and early consulting of neurosurgery.

None of the key actions that make up the ICH care bundle are new, nor do they individually require specialist training or equipment, Madeline and Inês say. This means it can be implemented even in low-resource settings, which tend to be associated with a higher and often younger incidence of ICH.

What is however new is the introduction of timing and targets (for example, systolic blood pressure should reach the target of less than 140 mmHg in under one hour), and the high levels of coordination required to activate the synergic effect. This is where a well-designed checklist is indispensable, one that is rooted in a deep understanding of the science, but is itself concise, clear and unambiguous, and allows professionals to carry out complex tasks with high efficiency and minimal error.

### Back to school

Mining the literature, engaging with the complexity, articulating the core meanings – Madeline and Inês had done all this before. Madeline studied molecular biology and holds a PhD from the University of Heidelberg, Germany. Inês studied pharmaceutical sciences and received her PhD in pharmaceutical chemistry and therapeutics from the University of Lisbon.

But it had been a while since they hit the books. As Angels consultant in Portugal since 2022, Inês is mainly concerned with implementation, while Madeline's role as project manager in the Angels core team draws more on her organizational than scientific gifts.

"I really enjoyed it," Madeline says of reimmersing herself in the field of science. It's something she wants more of. Both she and Inês found it intensely meaningful to have a chance to change people's lives not only as implementers but as creators of life-saving tools.

Constantly thinking about how to organize the information and how



to express new concepts fluently and coherently did mean her work became fused with her personal life, Inês says. But it didn't feel like work. "I loved it."

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It is results that determine value – and success.

”

### The five platforms in action

The ICH project has now entered its pilot phase. It has already been activated in some hospitals in Portugal that will monitor door-to-treatment times before and after implementation of the checklist. An elearning designed by Madeline and Inês will shortly be available in the Angels Academy, and the process of translating the materials into all 20 languages available on the Angels website is almost complete.

Their work has earned praise from Prof Steiner himself. But as Spanish author Miguel de Cervantes wrote 500 years ago, the proof of the pudding is in the eating. It is results that determine value – and success.

With the standardization and education platforms solidly established, attention turns to measuring success and supporting continuous improvement via quality monitoring. How ICH quality indicators will be incorporated into RES-Q, and as criteria for the WSO and ESO Angels Awards, will be top of the agenda at the Angels steering committee meeting at ESOC in May.

Presenting the proposed strategy to national and international steering committees is part of activating the community around ICH care bundle implementation. Experience has shown that lasting, effective transformation requires collective action and collaborative decision-making. One of the ways this is achieved is by mobilizing bright spots in the community to serve as models for innovation and change.

Madeline and Inês are optimistic that the ICH care bundle will encounter less hesitation than acute



Inês Carvalho (left) and Madeline Bucher.

treatments for ischemic stroke in some settings. “The research is new but the actions are not new,” they say, although they acknowledge that all change is hard and hospitals need to become convinced by the care bundle concept.

Inês says: “Things only move forward when you push.”

Moving things forward will be the work of the Angels field force of compassionate, courageous and committed consultants, who day after day, help hospitals overcome complexity in order to change outcomes for stroke patients around the world.

### What's in the script

The five-page checklist for ICH stroke is composed of three parts – Clinical Assessment and Imaging, ICH Management (using the care bundle), and Dosing Tables for blood pressure control and anticoagulant reversal. It consists of closed fields and multiple-choice options and is practical and easy to use even if stroke teams don't have detailed knowledge of the underlying guidelines, Madeline and Inês say.

The Clinical Assessment and Imaging section has fields for Patient Assessment (symptoms, symptom onset, medications,

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Working on the ICH project has reawakened their love of science.

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medical conditions, and blood pressure, INR and blood glucose on admission), Severity (NIHSS score, Glasgow Coma Scale and ICH score), and Diagnosis (imaging observations including location of hemorrhage).

The ICH Management section provides step-by-step coverage of the actions that make up the care bundle. These are: blood pressure treatment (with a door-to-target time under 60 minutes), anticoagulant therapy reversal (door-to-treatment time under 60 minutes), and blood glucose and temperature management, the latter with a door-to-target time under 60 minutes. It also offers guidance for early consulting of

neurosurgery, with tick boxes for types of intracranial bleeding, and a dedicated field for recording the surgical decision.

### More science, please

For Madeline and Inês, working on the ICH project has reawakened their love of science, and they're not hanging up their lab coats just yet. Madeline is looking for gaps among the courses in the Angels Academy and believes there are opportunities for expanding the elearning materials for post-acute care, also taking into account allied health specialists such as physiotherapists and speech therapists.

Inês is contemplating the complexity of merging the ICH and AIS pathways into a single document or tackling door-to-groin times by developing key priority actions that streamline the thrombectomy pathway.

It is generally held to be inevitable that the process of initiating transformation also reshapes the individuals driving it. So, it is not too far-fetched to think that in the process of creating tools that save lives, you may just catch yourself changing your own.

# Challenge accepted

**Croatia's first Angels Region demonstrates what it means to work together, embrace every challenge, and lead from the front.**



Prof. Vladimira Vuletić

Dr. Senka Kajčić

**IF you're in a hurry, Primorje-Gorski Kotar County in Croatia is tricky terrain, no matter what your emergency.**

You could find yourself waiting for a ferry on Rab or Lošinj or another of the famous islands in Croatia's Kvarner Gulf, or stranded in a charming, historic seaside town along the rocky, rugged Adriatic coastline. Or you could be slowed down by the lush, mountainous forested regions of Gorski Kotar. But here's why things will probably turn out okay.

In red category emergencies, the Institute of Emergency Medicine of the Primorje-Gorski Kotar County targets a response time of 10 minutes in urban areas, or 20 minutes in the countryside. If it's air transport you need, one of the service's four helicopters will be in the air within 5 minutes in daytime, and in under 15 minutes at night. And if the emergency is a suspected stroke, neurologists at the award-winning University Hospital Center (UHC) in the capital Rijeka will know about it well before they hear the whomp-whomp sound of rotor blades. For if there's one word that embodies the spirit of collaboration that has led to Primorje-Gorski Kotar becoming Croatia's first Angels Region, it is this: prenotification.

## Challenge accepted

Rijeka (that's the county's capital city) is a prenotification pioneer, EMS chief Dr. Senka Kajčić confirms. It became part of their modus operandi long before the idea took hold to make prenotification mandatory throughout Croatia's



Dr. Senka Kajčić

21 counties. They're leaders in data collection and analysis, too, with a reputation for accepting every new challenge and reaching for every new target.

In the three-and-a-half years since Dr. Senka became head of the service, there's been no shortage of challenges. In February 2024, the service was expanded to include non-emergency patient transport, taking the work force from 250 to 380. Less than two months later, Rijeka became one of the four main bases for Croatia's newly launched helicopter emergency medical service (HEMS), which went a long way towards solving the problems of islands and mountains.

Then in 2025, UHC Rijeka's neurology chief Prof. Vladimira Vuletić invited them to join the campaign to convert the county into an Angels Region, and the answer was a foregone conclusion. There was already a relationship of collaboration and mutual respect that prioritized the safety and well-being of citizens. She knew the emergency service only had to apply to the Angels EMS Awards for the rest of the world to realize how good they already were, Prof. Vladimira says.



## Celebration, education, inspiration

On 27 January 2026, Angels Region status was officially bestowed on Primorje-Gorski Kotar County during a hybrid event attended by Croatian Neurological Society president Prof. Zdravka Poljakovic, and Saša Balija, Assistant Director of Nursing at the Croatian Institute of Emergency Medicine.

“

Everyone was **proud and satisfied** that their **work and efforts had been recognized** beyond our borders.”

”

## Diamonds are a girl's best friend

Stroke care excellence in Rijeka is an overnight success that was a decade in the making. Collaboration between hospital and EMS dates back almost 10 years to when Prof. Vladimira first arrived from Zagreb. Education for healthcare staff across departments and services was met with enthusiasm and rewarded with constantly improving results. By the time Angels Region status became their goal, UHC Rijeka was already a diamond hospital twice over and the EMS was on track for diamond status.

Public health campaigns were held three times a year including at schools and kindergartens but weren't as well-conceived as the award-winning FAST Heroes program, Prof. Vladimira says.

To reach FAST Heroes implementation targets (a criterion for Angels Region status) Prof. Vladimira sought the support of Rijeka Mayor, Iva Rinčić, who connected her with school principals. Supported by Angels consultant Maria Sheverdina, the campaign was launched on World Stroke Day at the end of October and shot past its target by the end of November.

“We didn't know how individual teachers and students would react to stroke education at that age,” Prof. Vladimira reflects. “But the way the education of children with superheroes was developed, conceived and planned is excellent, and the children accepted it as well as the parents.”

“It was special because it brought together all the participants in this mission,” Prof. Vladimira says of the event. “Everyone was proud and satisfied that their work and efforts had been recognized beyond our borders.”



Consultant Maria Sheverdina had planned an event that was as much about education and inspiration as it was about celebration, as key participants shared their experience with the live and online audiences. Primorje-Gorski Kotar County might be the first Angels Region in Croatia, but it would definitely not be the last.

Because the consequences of stroke cause suffering not only to the patient but to the entire family and community, becoming an Angels Region offers Primorje-Gorski Kotar County the prospect of a better life, less marked by illness and disability. And the benefits are greater than stroke.

Prof Vladimira says: "This kind of project where not only the health system but also the education system, local authorities, and the population are involved, connects us more, and shows that everything is possible when we unite with a mission."

Prof Vladimira says the success of the Angels Regions campaign has sparked hope for other neurological patients who would benefit equally from public awareness leading to rapid action – particularly now therapies are available for many neurological diseases considered untreatable in the past.

### 'There's no better feeling'

The pessimism once associated with conditions like stroke was precisely the reason Dr Senka Kajčić ruled out neurology as a specialization. She wanted to be a doctor who saved lives and prevented consequences,



she says, and back then the outlook for stroke patients was simply too bleak, the disabilities life-changing.

She hadn't planned to specialize in emergency medicine either, but in the emergency department she discovered a field where she could help people directly in the worst moment of their lives.

"I'm a very happy emergency physician," she says. "I can see the result of my work very quickly."

“

People feel useful when they are **part of a good story.**

”



Prof Vladimira Vuletić (left) and Dr Senka Kajčić

There's no bigger happiness, no better feeling, than saving somebody's life, or seeing someone with a severe injury recover their health and resume their life among their friends and family."

After twenty years in a field she describes as "a lot of improvisation backed up by a lot of knowledge", meeting the criteria for Angels Region status confirms she and her team are doing a good job. They're making sure everyone who makes Primorje-Gorski Kotar County their home or destination is safe, and that no matter whether they're on an island or a mountain slope, help is just moments away.

A leader by example, Dr Senka doesn't lead from behind a desk, never demands the impossible; she answers questions like a colleague, and believes in giving people a chance to improve themselves.

The same progressive leadership style brings dividends at UHC Rijeka where Prof Vladimira says, "I had good role models in my career, and I added some personal qualities to my leadership style. It is important to motivate the team, give them importance and show them how they can help people in many ways. They feel useful when they see the results of their work and that they are part of a good story. It is then easier for them to cope with everything because our work is demanding."

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I have been in the field of stroke since the beginning of my career.

”

### 'It was all worth it'

Prof Vladimira was drawn to neurology by her love for mathematics and logic, and because the brain had always struck her as the most impressive organ. She says, "Everyone expected me to enroll in the Faculty of Electrical Engineering like my father because I was good at physics and mathematics. But I have an uncle who is a doctor and I liked him, so I decided to study medicine and I was not wrong."

She began her career in her hometown of Slavonski Brod, "in the eastern part of Croatia where they like to eat special sausages and ham and where there are a lot of strokes." Stroke was prevalent at the general hospital in Slavonski Brod, and became the topic of her doctoral thesis.

"Later, at the Dubrava Clinical Hospital in Zagreb, I was the head of the Department of Intensive Care for Cerebrovascular Diseases



KBC Rijeka hospital director Prof. Alen Ruzic with Angels consultant Maria Sheverdina and Rijeka Mayor, Iva Rinčić

and the Department of Movement Disorders and DBS (deep brain stimulation), which belonged to the Clinic of Neurology.

The next transfer was to Rijeka, where I was the head of the Clinic of Neurology at the Rijeka Clinical Hospital, so I have been in the field of stroke since the beginning of my career."

Patients and family members who appreciate the positive impact on their quality of life and self-confidence are a source of professional satisfaction, she says. So is seeing "the application of

new methods on the results and outcomes of a patient's treatment, as well as when the entire multidisciplinary team witnesses how much progress we can make together."

After 10 years, Prof Vladimira observes with satisfaction a community that is better educated, patients who recognize the symptoms and seek help in time, and much better outcomes than before.

She says, "It is a long-term effort, but now, after 10 years, the results are visible. And it was all worth it."

# Diamond rush



ER24 Durban operations manager, Willem Rossouw.

Desiring better outcomes for stroke patients was what motivated the team at Durban to partner with Angels. But the process has also opened doors, allowed relationships to grow, and rewarded this proud team with a well-deserved diamond award.

ALMOST three decades into a career as firefighter and paramedic, Willem Rossouw attended to a patient he would never forget. They'd been called out to Tongaat, a small town about 40 km north of Durban in South Africa's KwaZulu-Natal province, where an 11-year-old was suffering severe headaches. Recognizing the signs of intracerebral hemorrhage, Willem felt the ground shift beneath his feet as he watched the child die before his eyes.

He'd been attending emergencies since the age of 15, scarcely more than a child himself, but an 11-year-old dying of stroke? It went against the natural order of things.

A short while later, when Angels consultant Maxeen Murugan first contacted Durban to talk about optimizing prehospital stroke care, she found Willem more than willing to listen. He liked her approach, and what Angels stood for. If it was



Willem during a presentation at a regional workshop.

within his power to prevent it, there would be no more 11-year-old stroke fatalities on his watch.

## It's not about winning

is a private medical and emergency care provider operating from 29 bases throughout South Africa. Roughly one year after entering into a partnership with Angels, the Durban branch where Willem is operations manager won the group's first EMS Angels Award for outstanding prehospital stroke care. And at the end of 2025, the same team scored their third, this time achieving diamond status and taking their place among the world's best emergency medical services for stroke.

Of course they are proud. The diamond award is validation of hard work, clinical discipline, and shared commitment to delivering the highest possible standard of patient care, Willem says. But it was never just about winning. "Our primary expectation was to improve outcomes, not the award itself."

## Influencing peers, shaping practice

"Improvement is driven by people," Willem believes. His staff is competitive and driven by clinical excellence. To reach their goal they focused on collaborating with Maxeen and constructing relationships with the hospitals in their region, getting their systems in place, and providing ongoing education. As these processes matured, their performance became more polished.

Recently, Willem has also squeezed awareness training into his packed schedule, becoming an ambassador for the FAST Heroes schools-based stroke education program, and encouraging local schools to get involved.

Plus, Maxeen has put him on the agenda at regional EMS events, to spread the word about the importance of early symptom recognition and prenotification, and this opportunity to influence his peers and shape practice has been worth the nerves.

## Out in the field

Willem knew from the age of three that he wanted to become a firefighter and paramedic. Both his parents were in the military, so he grew up in a disciplined home where every minute was accounted for, and volunteered at the fire department from the age of 15. Ops manager for the past 10 years, first in Newcastle and then in Durban, he still goes out into the field to do what he loves. He'd go mad spending every day between four walls, he says, and he believes the right way to lead is from the front.

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Build a strong **team**, build **relationships**, understand the **urgency**, don't waste time on scene . . .

”

In more than three decades on the frontline he has witnessed momentous change in prehospital stroke care. “Many years ago in training, when we were talking about stroke we were thinking of older males with comorbidities,” he says. Now even 11-year-olds aren't safe.

But new treatments mean if you diagnose fast and provide emergency transport to the right hospital, you can preserve life and quality of life. “We're not the Big Guy, we're not making life-or-death decisions, but we can prevent unnecessary deaths and reduce



disability,” he says. The key lies in training more ambulance staff, getting prenotification right, and making more hospitals stroke ready.

## Fringe benefits

Treating stroke as an emergency has changed the game. There's no delaying transport until the patient is stable, for example. It's “load and go” and letting the hospital know you're on your way. There have been other changes too. The structure, urgency and teamwork that took Durban to diamond is benefiting patients no matter what the emergency, and collaborative relationships between emergency medical services and hospitals, difficult to negotiate in the past, are starting to flourish. For example, says Willem, a WhatsApp group created with Ethekewini Hospital for stroke is now being used for other emergencies too.

“Focus on the fundamentals,” is his advice to colleagues in nearby Pietermaritzburg who have just won their first platinum award. Build a strong team, build relationships, understand the urgency, don't waste time on scene . . .

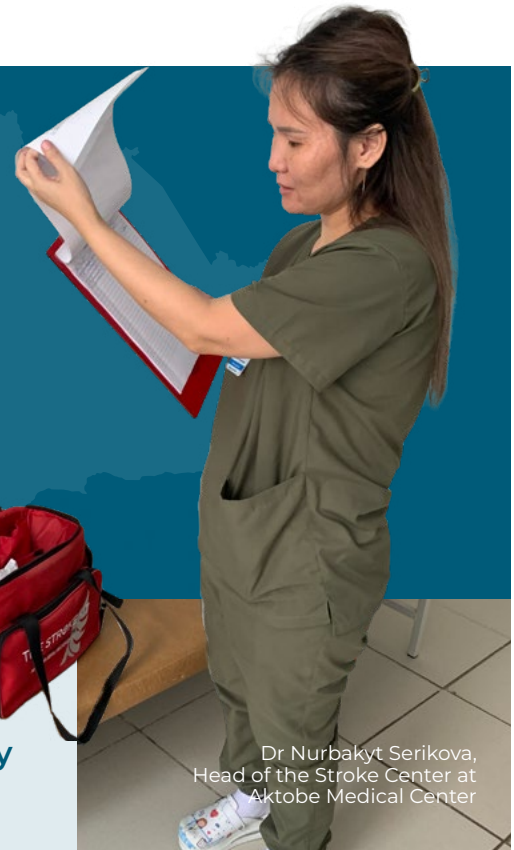
Better outcomes for stroke patients was what motivated the team at Durban to work with Angels to finetune their performance. But the process has also opened doors, allowed relationships to grow, and rewarded this proud team with a well-deserved diamond award.



Regional workshop for nurses and EMS.

# 'It depends on us'

One by one, three dreams came true in the Kazakh province of Aktobe, location of the first four Angels Regions not only in Kazakhstan, but in all of Central Asia.



Dr Nurbakyt Serikova, Head of the Stroke Center at Aktobe Medical Center

## Dream #1: Change

The dream of change began in 2018 when Dr Nurbakyt Serikova, Head of the Stroke Center at Aktobe Medical Center, attended the School of Stroke annually held in the Kazakh capital, Astana, and was introduced to the Angels Initiative. An invitation to the Angels' signature Train-the-trainer event followed, and it was during this event, held in Mainz, Germany, in 2019, that the future of stroke care in Aktobe province came into focus.

What Dr Nurbakyt was most struck by, besides the testimony of stroke doctors from other countries, was the transformative potential of ambulance prenotification – the first key priority action in the hyperacute pathway. A simple

phone call to alert the hospital that a suspected stroke was underway meant the stroke team was assembled even before the patient reached the ER. This was something they definitely had to implement, Dr Nurbakyt decided.

The daughter of a gynecologist, Dr Nurbakyt knew from childhood that medicine was her destiny. She'd witnessed the hard work that came with being a physician, but what mattered more was that her mom was "bringing new life into the world and saving mothers". Much later during her internship, when she saw stroke patients become disabled or die, she embraced both stroke neurology and the need for change. She says, "I understood that it depended on us, that humans could change it."

Back from Mainz, she saw no reason why stroke care in Aktobe province shouldn't be as good as or better than in other parts of the world, and with the support of Angels consultant Lev Prystupiuk, embarked on a stroke care transformation journey.

## Dream #2: A place on the stage

Dr Nurbakyt was clear that changing outcomes for stroke patients was about more than survival or living an unimpeded life.



"It's not just about saving people or giving them a normal life," she would tell the younger doctors in her hospital. "It's about families and memories and time to spend with parents and grandparents. It's about giving more time and moments of joy to families."

It wasn't only the families in her own district Dr Nurbakyt was thinking of. The former chief neurologist for the entire province, and now a consultant neurologist at all five



I understood that it depended on us, that humans could change it.



its stroke hospitals, Dr Nurbakyt's dream of change reached beyond her hospital doors and beyond the boundaries of Aktobe district.

Transforming stroke care in the province would need everyone to work together, but there was also the matter of leading by example. Dr Nurbakyt's best chance of rallying the other hospitals in the province was for Aktobe Medical Center itself to achieve the world-class standard they aspired to.

Dr Nurbakyt implemented all the tools recommended by Angels, including a stroke bag, Angels checklists, and a dedicated stroke phone, along with the resources in the Angels Academy.



Simulations demonstrated that an **award-worthy door-to-needle time of 40 minutes** was within reach.



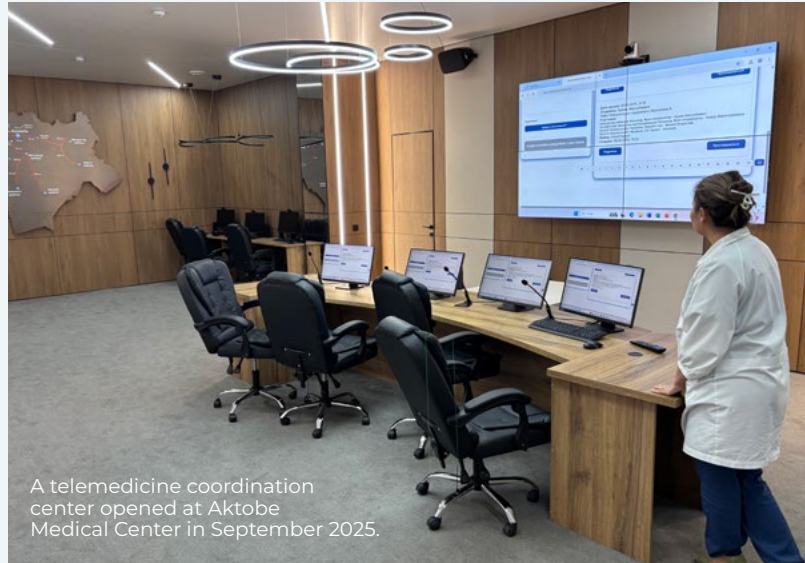
In quarter three of 2024, the hospital won the first of five consecutive diamond awards, and in Helsinki in May 2025, during the presidential session at ESOC, Dr Nurbakyt took her place on the stage beside some of the best hospitals in Europe.

Another dream had been realized.

### **Dream #3: The first Angels Regions in Kazakhstan**

As soon as she heard about the Angels Regions strategy, Dr Nurbakyt recognized that this was her next goal. Angels Region status for all four districts in the province – Aktobe, Khromtausky, Mugalzharsky, and Shalkarsky – would make change sustainable; it would be the culmination of all the progress made since the beginning of her partnership with Angels in 2019.

The road to regions status now began in earnest, with a comprehensive assessment of



stroke service geography, including coverage of stroke centers and accessibility for the population. After completing the regional mapping, Lev conducted on-site observations in each stroke center to identify bottlenecks, delays, and non-value-adding steps in the stroke pathway. Quality monitoring through the RES-Q registry and a series of multidisciplinary simulations delivered important breakthroughs. These activities created transparency in performance indicators and supported data-driven decision-making.

Working with the Department of Health, Dr Nurbakyt had developed a stroke code to be activated at the prehospital stage throughout the region. It was later captured in a

mobile app to facilitate monitoring and feedback, but as with every change initiative, its effectiveness depended on implementation and cooperation.

### **Education & teamwork**

Videos recorded during in-situ simulations offered a powerful argument for change in those hospitals that insisted their stroke service needed no improvement. These recordings delivered evidence of preventable delays of up to 40 minutes, and subsequent simulations with implementation of the stroke code and checklists demonstrated that an award-worthy door-to-needle time of 40 minutes was within reach.





A series of multidisciplinary simulations delivered important breakthroughs.

A major challenge across all four regions was the limited number of healthcare professionals familiar with modern stroke protocols, which was addressed via a program of standardized education. Here, too, Dr Nurbakyt played a decisive role, as she adapted educational materials to local realities, considering available equipment, infrastructure, and language, and ensured that all training was highly practical, simple, and applicable.

No less important was instilling a culture of multi-disciplinary teamwork, and creating consensus that a stroke patient was “not a neurology problem” but a problem of the whole team from admission to post-acute nursing and early rehabilitation. At Aktoke Multidisciplinary Regional Hospital, a comprehensive center offering mechanical thrombectomy, the idea gained acceptance that even neurointerventionists were part of the stroke team and bound by instructions and checklists.

### Awareness & emergency transport

Strong collaboration with regional opinion leaders and the Departments of Health and Education placed the regions project on a solid footing. In addition, the strong Kazakh tradition of grandparents' involvement in childcare created fertile ground for the child-led





knowledge-transfer mechanism underlying the FAST Heroes stroke awareness campaign – which was kickstarted by a series of face-to-face educational sessions involving more than 120 teachers.

The Angels Regions strategy recognizes that stroke awareness and optimized emergency transport are vital for getting stroke patients to the right hospital in time, and the Aktoobe Regional Station of Ambulance and Emergency Medical Care rose to the occasion with a platinum award in quarter one of 2025, followed by two diamonds.

Another significant development was a telemedicine coordination center that opened at Aktoobe Medical Center in September 2025. This Department of Health-supported initiative connects all

the hospitals in the province with a neurologist so stroke can be diagnosed and the patient referred to the most appropriate hospital without delay, and experienced practitioners are on hand to support complex decision-making.

### Advice for fellow dreamers

With the third dream now realized and history rewritten, Dr Nurbakyt has valuable advice for fellow dreamers who want to make their regions safe for stroke. It starts with getting the basics right – treating patients faster for better outcomes, implementing a stroke protocol with prenotification, educating teams, and committing to quality monitoring by submitting data to RES-Q.

The next important step is forming partnerships with authorities, including the Department of Education, and forming a working alliance with teachers. In Aktoobe, a plan is already in place to involve even more schools and teachers in FAST Heroes in the coming year.

And it doesn't end there.

In the four districts now officially recognized as Angels Regions, the next awareness project is to educate primary care physicians about stroke symptoms and prevention. This will allow patients who seek help at polyclinics to be rapidly assimilated into the referral system, and to receive the best possible treatment in a network designed and optimized to give life a second chance.



Angels Region conversion is a team challenge.

# Progress and partnership

What was once a vision is now a strategy, as a collective of like-minded physicians, unprecedented political support, and a planeload of Ukrainian experts usher in a new era for stroke in Uzbekistan.



Angels consultant Lev Prystupiuk

FLIGHT TK 368 from Istanbul touched down at Tashkent International Airport shortly after 8 am on Monday 16 February, carrying five Ukrainians who had come to participate in a remarkable story of progress and partnership.

On board were three neurologists – Dmytro Lebedynets, head of the Stroke Center at Feofaniya Hospital in Kyiv, his younger brother Pavlo, who is head of the Stroke Department at Odrex Medical Center in Odesa, and, with shoulder-length hair and sporting tattoo sleeves, Dr Ruslan Salnikov, head of the Stroke Center at the Kharkiv Regional Clinical Hospital. Towering over the rest were Dr Dmytro Hrynykha, interventional neurologist at Feofaniya Hospital, and Angels consultant, Lev Prystupiuk.

They were met in the arrivals hall by Dr Abror Abdullajonov, interventional neurologist at Shox International Hospital in Tashkent, Angels national coordinator, and founder of the stroke transformation collective, StrokeTeamUz.

After lunch, they would head to a working meeting with representatives of the Project Office and the Ministry of Health of Uzbekistan, to talk about developing a modern and effective stroke care system in Uzbekistan.

Stroke care transformation in Uzbekistan had recently received a shot in the arm after President Mirziyoyev formally endorsed the nationwide implementation of the Angels Initiative. Presidential Decree No. 20, issued on 20 January 2026, also made provision for, among other things, a national program to combat heart attack and stroke, 100 percent provision of thrombolytics and endovascular

consumables, implementation of structured clinical pathways, and large-scale professional training. In addition, the FAST Heroes stroke awareness program would be formally adopted in schools across Uzbekistan.

The first of two Acute Stroke Treatment and Decision-Making workshops aimed at creating future stroke centers in the Tashkent and Samarkand regions, would kick



A working meeting with representatives of the Project Office and the Ministry of Health of Uzbekistan



A working meeting with representatives of the Project Office and the Ministry of Health of Uzbekistan

off at 8 am the next morning. The Ukrainian experts were all on the agenda.

### 'Let's save one patient'

The goal of StrokeTeamUz was to unite like-minded professionals who wanted to improve the quality of care, says Dr Abror Abdullajonov, whom Lev describes as "the key driving force behind the stroke movement in Uzbekistan". Establishing this Instagram platform for community building and public awareness had been a response to a fragmented system



Let's **save** one patient.  
Let's **help** at least one person.  
Let's **create** a life without disability.



that lacked a single standardized approach to treating acute stroke, Dr Abror says.

"Protocols varied between hospitals, in-hospital routing times were prolonged, coordination between EMS and hospitals was limited, and experience in patient selection for EVT was still developing. We had strong individual specialists, but no

unified national system."

Between StrokeTeamUz and the Angels Initiative, there is a meeting of minds.

"Our mission aligns closely with Angels – standardization of stroke treatment. I remember during one of our first seminars saying: 'Let's save one patient. Let's help at least one person. Let's create a life without disability.' At that time, it sounded like a vision. Today, it is becoming a strategy."

Government support has completely changed the trajectory. "Before that, we had many

When five months later the presidential decree formalized the National Stroke Program, that was the moment they moved "from initiative to state policy".

### Witnessing a miracle

He has always wanted to be useful to people, Dr Abror says.

"My choice of medicine was largely inspired by my mother, for which I am very grateful. Choosing interventional radiology was driven by the possibility of directly preventing death and disability. Before residency, I reviewed WHO



Dr Abror Abdullajonov and Lev Prystupik

meetings, but little sense of real momentum," Dr Abror says.

A meeting with the Ministry of Health project office in August 2025 delivered a turning point. "I understood that stroke care had become a priority not only for clinicians but for the state and the presidential administration," he says.

statistics showing that heart attacks and strokes were leading causes of mortality. I knew that was where I could make the greatest impact.

"My special interest in stroke developed during residency. I saw a patient treated with thrombolysis and thrombectomy – speech returned, movement recovered. It felt like witnessing a miracle. That moment changed me."

## Lessons beyond medicine

The strategic objective of the February workshops was to train teams in a modern stroke care system aligned with the National Program and Presidential decree, Dr Abror says.

“We started with two regions, Tashkent and Samarkand, as part of a phased implementation. Nationwide expansion is planned from 2027 onward.”

“

Success will be an Uzbekistan where stroke doesn't inspire fear **“because the system works”**.

”

Participants included neurologists, radiologists, interventional specialists, intensivists, nurses – around 10 representatives from each stroke center in the two regions. A separate seminar was organized for EMS personnel “because they are a critical link in the stroke chain of survival”.

The involvement of Ukrainian experts was deeply meaningful, Dr Abror says. “They shared not only clinical expertise but also experience in building systems under extremely challenging circumstances. One phrase stayed with me: ‘It took us five to six years to build our system. You can do it in two to three.’



“Their resilience and structured thinking are lessons beyond medicine.”

### A bridge towards a shared goal

Being a national coordinator for Angels is a major responsibility, Dr Abror says. “The coordinator acts as a bridge — connecting the Ministry of Health, WHO, clinicians, and international partners. Much depends on someone who can unite people toward a shared goal.”

He has already outlined a two-year plan. Next steps include successfully completing the Train the Trainer programs in Mainz, Germany, and Astana in Kazakhstan, forming a core national leadership group, and conducting in-situ training through StrokeTeamUz.

“We understand there is still much work ahead.”

Success will be an Uzbekistan where stroke doesn't inspire fear “because the system works”.

“Yes, stroke is serious. But when citizens recognize FAST symptoms, when EMS responds quickly,

when treatment is standardized – outcomes change.”

Is it too soon to speculate on what Uzbekistan can teach the rest of the world about stroke?

“It may be early to draw conclusions,” Dr Abror says. “But if there is something others could learn from Uzbekistan, it is unity and persistence. Even when facing resistance, systemic transformation is possible when professionals stay committed.”



Workshop for EMS



Treating stroke is teamwork, and so is transforming stroke care in one's country. In recognition of this, Dr Abror writes: "I would like to express my sincere gratitude to the Project Office of the Ministry of Health of Uzbekistan, as well as Adilov Eldor and Umid Mirzaidov, for their collaboration. Over the past eight months, tremendous work has been done on the development of Order No. 20.

"I would also like to thank everyone who contributed to the creation of this important decree."

"Special thanks go to every member of StrokeTeamUz. I believe the team faces a very significant mission. Today there are 15 stroke centers in the country, but with continued governmental support we aim to increase this number to 40 stroke centers in the future."



Simulation training for hospital staff

# Grand mission accomplished



Robbie Hurly

Dainfern College in Johannesburg shot to the top of the FAST Heroes leaderboard last November, thanks to a handful of eighth-graders bent on making a difference.

ROBBIE HURLY is in grade nine at Dainfern College, an independent school in a northern suburb of Johannesburg. His favorite subjects are maths and physics, and the extramurals that fill his afternoons include tennis and singing. He likes solving problems, so he's thinking of becoming an engineer. In the same way no one suspects Clark Kent of being Superman, you wouldn't guess straightaway that Robbie was a superhero. And yet, lifesaving knowledge about stroke is reaching parents and grandparents because Robbie raised his hand.

Now going on 15, Robbie was a 13-year-old eighth grader when he first learnt of FAST Heroes, the award-winning schools-based stroke awareness campaign that activates a child-led knowledge-transfer mechanism to teach families about stroke. The program was developed in partnership with the Department of Education and Social Policy at the University of Macedonia in Greece and is endorsed by the World Stroke Organization. Worldwide, over one million children in nearly 17,000 schools have already signed up for the Grand Mission to keep their loved ones safe from stroke.

Robbie's mom, Dr Jenny Frankel, is an emergency care and trauma doctor, and one of his rock solid role models along with his grandfather and his dad. When she

brought FAST Heroes materials home, Robbie saw an opportunity to make a difference by introducing

“

Learners from grade eight and up are each **required to complete 10 hours of outreach per year.**

”

the program at his school. He also had a personal reason for getting involved – his uncle is a stroke survivor who is living with the consequences of late diagnosis and treatment. This is precisely what FAST Heroes was designed to prevent.

Robbie approached his task with exceptional professionalism, first pitching his idea to the FAST Heroes national coordinator Renathe van der Merwe and Angels consultant Wendy Mandindi, before introducing Renathe to the Dainfern College principal. Once convinced of the advantages to the school and community, the principal put them in touch with the head of the Foundation Phase. Next, Renathe registered the school, and held a workshop for teachers which Robbie also attended.

Dainfern College encourages a culture of service, and learners from grade eight and up are each required to complete 10 hours of outreach per year. “The more hours, the more doors you open,” Robbie believes. Learners make themselves useful to the community for example by helping out at pet shelters, or making sandwiches on Mandela Day, a day on which people celebrate the life and legacy of former president Nelson Mandela by helping others.



FAST Heroes offered a unique and sustainable opportunity to serve the community, as Robbie told his classmates in a speech addressed to the entire grade.

“There are always people who jump into action and those who don’t care,” he says philosophically. In the end about 10 students signed on, and Robbie was struck by how many of them had family members who had been affected by stroke.

“

We’re all learning about **time-management and resilience.**

”



Robbie saw an opportunity to make a difference by introducing the FAST Heroes program at his school.

The efforts of Robbie and his fellow superheroes to support FAST Heroes implementation were rewarded last November when Dainfern College shot to the top of the national FAST Heroes leaderboard, with individual learners and classes featuring in the top 10.

But it’s not about prizes or popularity, Robbie says. Knowing

they’re making a difference is what warms his soul. He’s already thinking of the optimal format for future rollouts, and ways to expand learning about stroke to the senior phase. He also looks forward to his younger brother entering

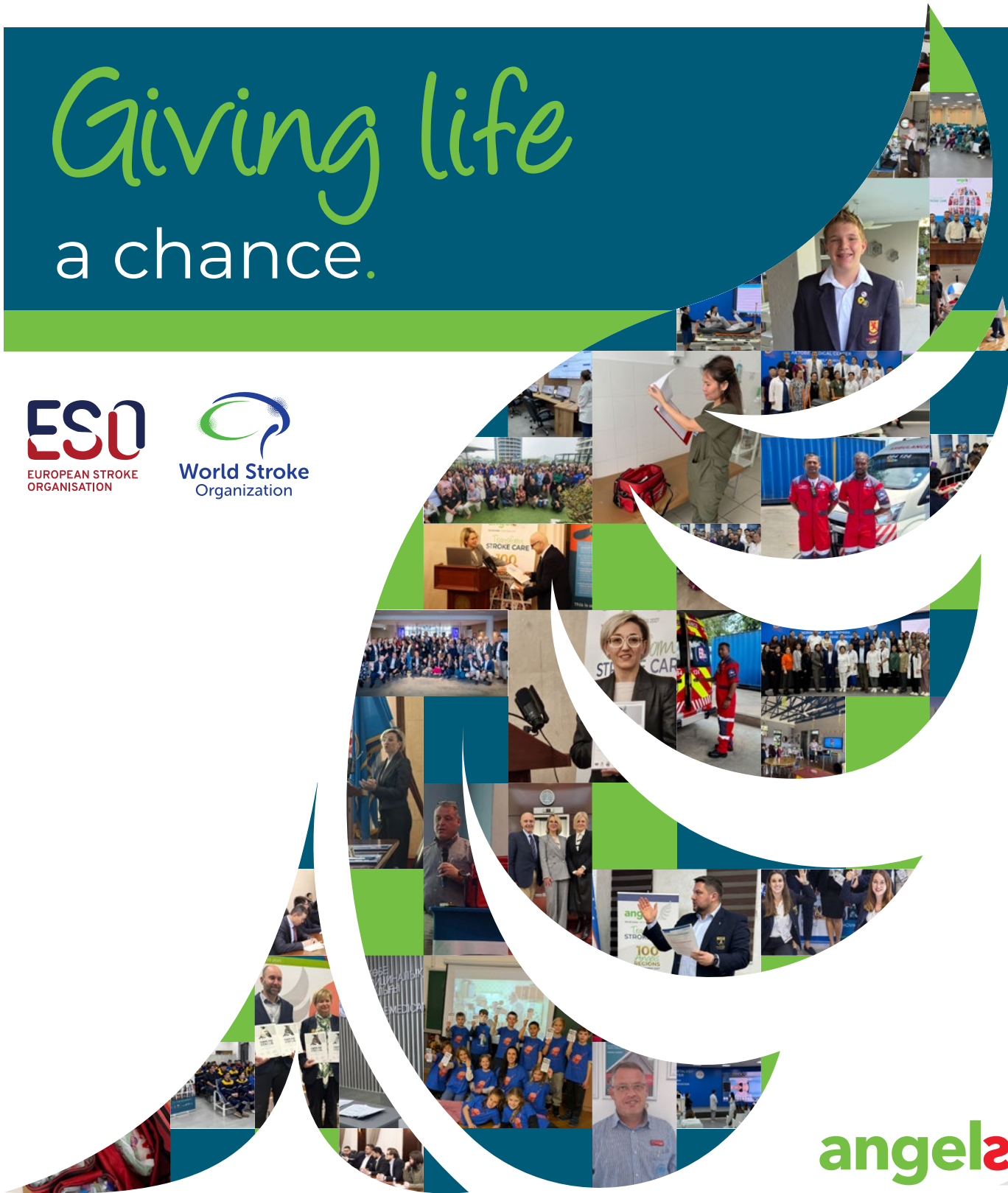
high school and earning his own superhero cape.

Meanwhile, this future engineer is busier than usual as the school is preparing its production of the Legally Blonde musical. Cast as one of the leads, Robbie must attend rehearsals every evening. “We’re all learning about time-management and resilience,” he says stoically.

Given the school’s vibrant performing arts scene, the première on 11 March is bound to be a hit. But, as far as the FAST Heroes community is concerned, long before the curtain goes up, Robbie is already a star.



# Giving life a chance.



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