

# New tech to tackle leaves on the line and de-ice platforms set to revolutionise British rail travel

- twenty-five projects across Great Britain win share of £9.4 million in fourth round of First of a Kind competition
- projects including innovative 5G wifi infrastructure, hydrogen-powered freight trains and speedy new seat-switching app awarded funding
- government-backed fund aims to bring new technology onto the railways to make them cleaner, greener and safer, as the UK leads the way to net zero carbon emissions

Automatic de-icing concrete on platforms and a rapid seat reservation-swapping service could soon make journeys easier by banishing slippery surfaces in winter and guaranteeing passengers a seat, Transport Secretary Grant Shapps announced today (17 June 2020), following a national competition to make the railways cleaner, greener and more passenger-friendly.

The Department for Transport, in partnership with Innovate UK, has awarded 25 pioneering projects a share of £9.4 million in the 2020 First of a Kind (FOAK) competition, which encourages innovation in the rail industry.

Inventors have come forward with a host of ambitious projects to transform rail travel, including low-energy concrete slabs that automatically heat up in freezing conditions to help prevent passengers from slipping on icy platforms and the Seatfrog Train Swap app, which will allow passengers to quickly and remotely update their seat reservation to another service.

Several winning projects will also help the government reduce the railway's environmental impact and support decarbonisation, including a world-first zero emission machine for removing and replacing rails, and hydrogen-based steam turbines to provide zero-emission, low-noise rail freight.

Other schemes supported by the competition include next-generation lightweight composite poles to provide passengers with faster, more reliable 5G wifi, and the development of safer and more resilient glazing for train windows to help prevent glass windows being smashed and protect passengers.

Transport Secretary Grant Shapps said:

I am delighted to announce the winners of this year's FOAK competition, which will support better, more environmentally friendly journeys. Crucially, these pioneering projects will also ensure that passengers have a more efficient, reliable and responsive railway, making their journeys simpler and easier.

From clever technology on platforms to prevent icy surfaces, new

‘seat-switching’ apps and improved 5G wifi connections, harnessing innovation will be crucial to modernising the network and making our railways greener and cleaner, as we build beyond coronavirus (COVID-19) and look to the future.

Ian Campbell, executive chair of Innovate UK, said:

These high-quality projects illustrate the appetite of UK organisations to develop new and exciting innovations for rail transport that improve customers’ user experience, optimise railway efficiency, and are environmentally sustainable.

Now in its fourth year, the competition was open to organisations of all sizes and sectors whose technologies could help to create a greener, more cost-effective and customer-friendly railway with greater capacity.

Previous winners include new technology from Porterbrook in partnership with emissions specialist Eminox, which successfully reduces harmful emissions from diesel trains by over 90%.

South Western Railway completed a six-month trial in March of the technology that saw an emissions reduction system fitted to the exhaust of a Class 159 train used by passengers between Waterloo and Exeter.

The trial delivered immediate reductions in pollution from nitrous oxides by over 80% and hydrocarbons, carbon monoxide and particulate matter by more than 90%, and is the first successful transfer of proven automotive technology to a rail environment.

OpenSpace Thameslink also received funding for its plans to provide station management with a set of next-generation tools to help with crowd management at London St Pancras International. The project, in conjunction with Govia Thameslink Railway Ltd, immediately found this helped with easing crowds to help maintain social distancing during the coronavirus (COVID-19) pandemic.

The full list of winners are:

## Customer experience

Project	Lead organisation	Summary
Train Swap	Seatfrog Ops Limited	Allows passengers to quickly and remotely update their seat reservation to a new service.
Dynamic Capacity Management	Esoterix Systems Ltd	Introduces utility-style ticketing that adjusts to travel patterns and rewards particular choices, using a monthly subscription that will help customers to save money on a large upfront fee.

Project	Lead organisation	Summary
Next-generation composite poles for a 5G-enabled railway	Hive Composites Ltd	Installation of lightweight composite poles along railway lines, to improve wifi speed, consistency and connection on the rail network for all rail passengers.
Illumin-heated concrete platform copers slabs	Sheffield Hallam University	Illuminated and heated low-energy concrete slabs used on railway platforms that automatically switch on in freezing conditions to help prevent passengers from slipping on ice.
LAMINAR	iProov	Demonstrates how biometrics can dramatically enhance the passenger experience, reduce congestion, improve safety and enhance security.
Track to Train communications to Transport for Wales	Ingram Networks Ltd	Lab-based study into new very high-speed communications technology for railways demonstrating very cost-effective trackside to train communications infrastructure over the whole 8km length of the heritage railway in Leicestershire, at speeds of 10Gbps+.

## Environmental sustainability

Project	Lead organisation	Summary
Prototype zero emissions Trac Rail Transposer (TRT-e)	Unipart Rail Limited	A zero-emissions machine that removes and replaces rails.
LoCe: Less oil, Cleaner exhaust	Porterbrook Leasing	Transferring novel retrofit technology onto one of Porterbrook's Class 170 Turbostar vehicles to enable mid-life diesel engines to rapidly become more environmentally sustainable.
Zero-emission rail freight power	Steamology Motion Ltd	A hydrogen-based steam turbine system that delivers zero-emission power solutions for existing rail freight locomotives.
Daybreak	Riding Sunbeams Ltd	Focuses on decarbonisation of the railway industry. It has developed direct connection between renewable energy generation and overhead lines of the railway systems.
Resi-Glaze	Far-UK Ltd	Aims to develop an innovative and resilient glazing solution to ensure passenger safety on trains and potential CO2 emissions saving.

Project	Lead organisation	Summary
HydroFLEX Raft Production	BCRRE	A power pack design to enable a hydrogen train to work in service, minimising the loss of passenger saloon space.
A novel, low environmental impact, composite railway footbridge	Associated Utility Supplies (AUS) Ltd	A low environmental impact footbridge, which will be the first railway footbridge made entirely from fibre reinforced polymer. It will be significantly easier to install than the equivalent steel bridge, greatly reducing network disruption and local environmental damage.

## Optimised and cost-effective maintenance

Project	Lead organisation	Summary
Integrated Optical Fibre Sensing (OptRail-PRO) to	rcm2 limited	Optical fibre sensors that monitor the condition of switches and crossings on railway tracks.
Train Axle Crack Monitoring	TAMON – Perpetuum Ltd	Helps to reduce returns to depot by using sensors and pattern-recognition technologies to monitor for cracks in train axles.
High-Speed Cryogenic Blasting for Rail Cleaning to Alleviate Low Adhesion	The University of Sheffield	High-speed cryogenic cleaning system for tracks to prevent low adhesion and slow running of trains.
InnoTamp	Fugro	Data gathering to ensure the maintenance of optimum rail alignment.
Thermal Radiometry for the Remote Condition Monitoring of Railway Vehicles	Rail Innovations	Uses thermal radiometry camera technology to measure temperatures of mechanical systems on moving trains. This enables automatic alarms to be sent over the Internet in the event of an over-temperature occurrence.

## Optimised railway operations

Project	Lead organisation	Summary
Minimising disruption of overhead line renewals via novel headspan assemblies	Associated Utility Supplies (AUS) Ltd	Span wire clamping system to enable rapid, low-cost overhead line equipment headspan renewals with minimum network disruption.
Trainserv Software User Trial and Preparation for Commercialisation	Cogitare Ltd	Trainserv integrates multiple sources of real-time data for use by rail workers to help them improve services and respond to incidents.

Project	Lead organisation	Summary
<b>Cleartrak on Train Testing (CoTT)</b>	Garrandale Limited	Innovative and efficient system for processing toilet waste, reducing cost and maintenance requirements.
<b>IRIS: Information system for railway station staff</b>	Liverpool John Moores University	A new kind of information system for frontline station staff to enhance communication and enable them to help passengers in making travel decisions/planning more effectively.
<b>Railway Optical Detection and Obstructions-Tunnel &amp; Station Monitoring</b>	Vortex IoT Limited	Sensors and data analysis tools to detect and identify intrusion and obstructions on the track, and send real time situational alerts to the rail control centre to prompt further investigation.
<b>Improving resilience through a surface water flooding decision support system</b>	JBA Consulting	Seeks to develop a first-of-a-kind surface water flood forecasting and early warning system for Network Rail using technology and data to map the surface water flood likelihood in real time, ahead of the event and forecast rainfall intensity.
<b>Improved railway operations through train-mounted water addition</b>	CoCatalyst Limited	Spraying a small amount of water from the train when slippery rails are detected to improve train traction and braking, and prevent subsequent services from being affected.

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## [Flood asset repairs continue during the coronavirus pandemic](#)

The 3 named storms in February – Storm Ciara, Dennis and Jorge – caused extensive disruption and severe impacts with many areas flooded, including parts of the Midlands.

With ground already sodden from last autumn's heavy rains and floods, the area quickly became flooded, with many rivers, including the Severn, reaching some of the highest levels ever seen or reaching levels not seen since 2000.

Sadly homes and businesses were flooded and Environment Agency flood defences prevented the flooding being much worse by protecting 14,500 properties from flooding in the devastating February floods.

Making sure flood defences are in top shape to protect communities again is a

priority for the Environment Agency and a £7.5m flood recovery programme of the repair of flood defences in the Environment Agency's West Midlands area\*, damaged in the February floods is now underway. The programme includes £300,000 maintenance of the Severnside defences in Bewdley, Worcestershire.

The work, which will improve the standard of flood protection to 270 properties, includes resetting the block pavers that sit under the flood barriers to reduce seepage during a flood, following damage caused during the October and February floods. It also includes the resealing of the elements of the barrier that remain in place and the recladding of the floodwall at Gardners Meadow.

All work is being carried out whilst following government guidelines on social distancing and ensuring contractors are also following the correct procedures.

Richard Henderson, Asset Recovery Manager for the Environment Agency, said:

During coronavirus we are continuing to maintain and operate our flood and coastal defences to ensure they protect people and property from flooding. We carry out regular checks, tests and repairs that ensure our defences can continue to reduce flood risk to homes and businesses.

Repairing our flood defence assets in Bewdley will make a big difference to reducing flood risk to more than 270 properties.

The sheer volume of water in the system in the February floods put pressure on many of our flood defences. Since then, where possible, and, whilst adhering to government guidance due to the current pandemic, our teams have been inspecting defences to check for any damage and the need for any repairs, so that we can ensure they are ready for any future floods. We have also used drone footage to help with the process.

This work is going well and the repairs we are carrying out in Bewdley will extend the life of the Severnside flood defences.

The Severnside Scheme protects properties on the town side of the river, and consists of concrete flood walls, demountable barriers and two pumping stations. The work is expected to be complete by the end of August.

Environment Agency teams work around the clock to help protect people from flooding, but flood risk can never be eliminated completely, everyone still has a responsibility to take steps to protect themselves.

Check whether you're at risk of flooding, and [sign up](#) to receive our free flood warnings, or call 0345 988 1188. By registering, you can choose how you'd prefer to be reached – by text, phone call to a mobile or landline, or even email – giving you vital notice to prepare if flooding is expected.

\*The Environment Agency's West Midlands' area includes Shropshire, Herefordshire, Worcestershire, Gloucestershire, Staffordshire, Birmingham and the Black Country.

## Notes to editors:

- According to Met Office statistics, February 2020 was the wettest February on record for England with double the average monthly rainfall. It was also the 5th wettest of any calendar month since 1862 and some areas experienced a month's worth of rain in 24 hours. In England 154.9mm rainfall fell, 258% of the average rainfall for the month. Some places received over 4 times the average monthly rainfall.
- The level of the River Severn at Bewdley reached 5.48m in February 2020. In November 2000, pre-Severnside defences, the level was 5.56m. In February 2014, the level was 5.04m.
- The Severnside North Scheme, completed in 2004, consists of 60m of concrete flood wall, 180m of demountable barriers and 1 pumping station.
- The Severnside South Scheme, completed in 2006, consists of 140m of concrete flood wall, 450m of demountable barriers and 1 pumping station.

We encourage all those who may be at risk of flooding to take steps to protect themselves by:

- signing up for free flood warnings via Floodline on 0345 988 1188
- keeping up to date with the latest flood information on [GOV.UK](https://gov.uk)
- checking our [live flood warning map](#)
- downloading our free Smartphone Flood Alert App
- follow us on Twitter at [@EnvAgencyMids](https://twitter.com/EnvAgencyMids) to keep updated on the work we are doing.

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## [Reaching an inclusive and Syrian-led political process in Syria](#)

Merci, Mr President.

Mr President, I'd like to begin by once again thanking the Special Envoy for his briefing, and a thank you also to Miss Noura Ghazi for joining us today and for her heartfelt yet clear eyed appeals for justice. We felt the pain you expressed on behalf of so many Syrians. Thank you.

We remain deeply concerned at the security situation in north-west Syria and we welcome the 5th of March ceasefire agreed between Russia and Turkey, which brought a vital period of relative calm to the north-west and allowed some of the million people displaced during the regime and Russian offensive at the beginning of this year to start returning to their homes. But recent weeks have seen fierce fighting between extremists and regime forces and in recent days we are concerned to hear reports of renewed Russian airstrikes, some of which cause civilian casualties on the 8th of June and prompted others to flee. The UK fully supports the request of the UN Special Envoy and Secretary-General for a lasting cessation of hostilities in the north-west and throughout Syria. This Council and the UN have repeatedly warned a continued escalation in fighting would have catastrophic consequences for the three million Syrian civilians in the north-west. We urge all parties to show restraint and to redouble efforts to work together and with the Secretary-General and his Special Envoy to find a political solution, particularly at a time when Covid-19 poses a severe threat in a country already weakened by conflict.

As we agreed unanimously in Resolution 2254, and have reiterated many times since, the only sustainable solution to the crisis in Syria is through an inclusive and Syrian-led political process that meets the legitimate aspirations of the Syrian people. And yet, despite this unanimous agreement, the Syrian regime, aided and abetted by a permanent member of this council, has ignored Resolution 2254 and continued to subjugate the interests of the Syrian people to its pursuit of a military solution. The devastating effect of this policy on the Syrian people and the Syrian economy are increasingly clear and compounded, as we heard from Mr Pedersen, by global factors. The collapsing economy in Syria is exacerbating the plight of civilians in all parts of the country. While Covid-19 and the problems of the Lebanese economy are clearly important, contributing factors, the main cause for the state of the Syrian economy remains the years of conflict, corruption and mismanagement by this regime. Unless the regime resolves to engage genuinely in political dialogue, to focus on reform and address the legitimate concerns and aspirations of the Syrian people, there will be no sustainable solution. While the crisis intensifies, the UK continues to support OCHA and the World Health Organisation in providing lifesaving assistance to those who need it most. Whilst the cross-border aid mechanism is a temporary measure to achieve this, the Secretary-General has made clear in his report that there is not yet any alternative either in the north-west or the north-east.

It is with this in mind that UN Security Council Resolution 2504 must be renewed for a further 12 months and cross-border assistance into the Northeast must be reauthorised.

We note that last week, Assad sacked his Prime Minister, and at the end of May he appointed a new set of governors, no doubt to give the impression that he is doing something to address the problems facing Syria and his failure to deal with them. But that is not what Syrians have been calling for. What they need and what they deserve is a better Syria, and for the concerns and grievances that brought them into the streets in 2011 to be addressed. It is in this connection that we greatly commend the work of Noura Ghazi for the



rights of the families of the detained. We have discussed time and again at these council sessions the need for the regime to engage properly on the detainee's file.

Limited prisoner swaps and not enough. We urge the regime to make widespread releases of political prisoners and vulnerable people and to ensure medical care is available for those still in detention. This is all the more important given the threat posed by Covid-19. We are proud the UK is able to support Noura's work through the Women's International League for Peace and Freedom.

Finally, Mr President, we have heard criticism again today of sanctions against the Syrian regime. The way to achieve the removal of these sanctions is clear. Rather than interfering with aid, bombing schools and hospitals and detaining and torturing its people, the regime must heed the cause of its population and engage seriously with Special Envoy Pedersen and the UN led political process, to achieve a peaceful end to the conflict.

As we say again, goods and medical supplies used for humanitarian purposes are not subject to EU sanctions, which the UK continues to apply, and additional exemptions from sanctions are available for humanitarian activity in Syria. I would note again that the UK and our European partners are among the leading donors to humanitarian aid to Syria, including in regime held areas. Thank you, Mr President.

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## **PM statement at the coronavirus press conference: 16 June 2020**

Good evening,

I am delighted to be joined today by the Chief Scientific Adviser, Sir Patrick Vallance, and by Professor Peter Horby, from the University of Oxford's Centre for Tropical Medicine and Global Health.

Today I'm actually going to let them do most of the talking as they have some news to share on a new treatment for coronavirus.

But I'll start by updating you briefly on the latest data.

Can I have the first slide please?

- 6,981,493 tests for coronavirus carried out or posted out in the UK. This includes 113,107 carried out or posted out yesterday.
- 298,136 have tested positive, an increase of 1,279 cases since

yesterday.

The second slide shows the latest data from hospitals:

- 410 people were admitted to hospital with coronavirus in England, Wales and Northern Ireland on 13 June, that's down from 438 a week earlier, and down from a peak of 3,432 on 1 April.
- 385 coronavirus patients are currently in mechanical ventilation beds in the UK, down from 513 a week ago, and down from a peak of 3,301 on 12 April.

The third slide shows what is happening in hospitals across the country:

- There are now 5,254 people in hospital with coronavirus in the UK, down 16% from 6,282 a week ago and down from a peak of 20,698 on 12 April.

The fourth slide shows the daily figures for those who have sadly lost their lives after testing positive for coronavirus:

- And across all settings, the total number of deaths now stands at 41,969. That's an increase of 233 fatalities since yesterday.

Although those figures are very sad, they do show that we are making good progress in controlling the spread of the virus.

Tests are up and cases are down.

Hospital admissions are down.

The numbers of patients in hospital overall – and specifically those on mechanical ventilation beds – are both down.

And of course while each death is one too many, deaths are coming down too.

That progress of course has only been possible thanks to the dedication of the British people as we work together to beat this virus.

By observing the lockdown, and sacrificing contact with friends and families, everybody has played their part in bringing the virus under control.

It is critical now that we hold our nerve – and we don't throw away the progress we have made.

On the 11 May I set out our plan to help our country recover and we are working through it, carefully and deliberately.

At each stage we have only proceeded when the evidence suggests it is safe to do so, ensuring our five tests for adjusting the lockdown continue to be met.

And yesterday it was great to see our shops open their doors again. Our retail sector has done a fantastic job to make sure they are Covid Secure, meaning they can open in a safe way for staff and for customers.

It is great to see so many people out shopping whilst observing social distancing – and that is so important to limiting the spread of the virus.

It has also been very good to see more, and more children back at school this week, with some secondary pupils returning for face-to-face contact with their teachers ahead of the exams next year.

And I want to say to all parents whose children are eligible to return to school, I want to assure you it is safe – and there is no need for your kids to miss out on their education, I hope they will go to school.

I know that people want us to go further – with our changes to social distancing measures and I am all too aware the 2 metre rule has big implications for schools and many other sectors, and I absolutely hear those concerns and will do everything in my power to get us back to normal as soon possible.

But we must proceed carefully, and according to our plan. I am still committed to the central goal to get back to life as close to normal as possible, for as many people as possible, as fast and fairly as possible... and in a way that minimises the risk of a new epidemic, minimises the risk to life and maximises our chances of a strong economic and social recovery.

Our plan sets out that the next step of adjusting lockdown – for personal care, for the hospitality and leisure sector, for gatherings in places of worship and other public places – a lot more to come and that as you know will happen no sooner than 4 July.

I remain committed to that plan, and will say more soon about how we intend to take it forward.

Today, the global efforts to find a long-term solution to the pandemic continue, through a vaccine or effective treatment.

And I am delighted that the biggest breakthrough yet has been made by a fantastic team of scientists right here in the UK.

I am not really qualified to announce on this drug and its effects but I will ask Sir Patrick and Professor Horby to say more in a moment.

But I am so proud of these British scientists, backed by UK Government funding, who have led the first robust clinical trial anywhere in the world to find a coronavirus treatment proven to reduce the risk of death.

And I am very grateful to the thousands of patients in this country who volunteered for the trials – thank you.

This drug – dexamethasone – can now be made available across the NHS. And we have taken steps to ensure we have enough supplies, even in the event of a

second peak.

Of course, while the chances of dying from Covid-19 have been significantly reduced by this treatment, they are still far too high. So we must redouble our research efforts and we certainly will.

But today, there is genuine cause to celebrate a great, British achievement and the benefits it will bring not just in this country but around the world.

I'll now hand over to Sir Patrick.

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## World first coronavirus treatment approved for NHS use by government

- Ground-breaking coronavirus treatment approved for use across the NHS from today
- Government-funded UK trial showed drug saved lives by significantly reducing risk of death in hospitalised patients who require oxygen
- Government ensures drug is available across all NHS healthcare settings and across the whole of the UK with immediate effect

Thousands of lives will be saved in the UK with the government immediately authorising the NHS to use the world's first coronavirus treatment proven to reduce the risk of death.

Dexamethasone, an anti-inflammatory drug, has been immediately approved to treat all UK hospitalised COVID-19 patients requiring oxygen, including those on ventilators, from today.

The drug has been proven to reduce the risk of death significantly in COVID-19 patients on ventilation by as much as 35% and patients on oxygen by 20%, reducing the total 28-day mortality rate by 17%.

Funded by the UK government, via the National Institute for Health Research (NIHR) and UK Research and Innovation (UKRI), the Oxford University UK RECOVERY trial is the first clinical trial anywhere in the world to show a treatment provides significant impact in reducing patient mortality.

The government has taken action to secure supplies of dexamethasone in the UK, buying additional stocks ahead of time in the event of a positive trial outcome. This means there is already enough treatment for over 200,000 people from stockpiles alone.

Health Secretary Matt Hancock said:

I'm absolutely delighted that today we can announce the world's

first successful clinical trial for a treatment for COVID-19. This astounding breakthrough is testament to the incredible work being done by our scientists behind the scenes.

From today the standard treatment for COVID-19 will include dexamethasone, helping save thousands of lives while we deal with this terrible virus.

Guided by the science, the UK is leading the way in the global fight against coronavirus – with the best clinical trials, the best vaccine development and the best immunology research in the world.

I want to thank the brilliant scientists at Oxford University, the thousands of patients who took part in the study, and my own team, led by Professor Jonathan Van-Tam, who has done such a brilliant job driving this work.

The drug has also been added to the government's [parallel export list](#), which bans companies from buying medicines meant for UK patients and selling them on for a higher price in another country. This will protect supply for UK patients by enforcing regulatory action on those who flout the restrictions.

Throughout the pandemic, the government has supported British research with millions of pounds of funding for clinical trials into the most promising and innovative medicines in our fight against this new virus, including £2.1 million for the RECOVERY trial.

This clinical trial is testament to the success we see when government, scientists and the NHS – including 175 NHS trusts across the whole of the UK – work together. With over 177,000 patients enrolled, it's the largest randomised clinical trial anywhere in the world and will continue to trial other medicines, such as azithromycin and lopinavir-ritonavir.

Deputy Chief Medical Officer, Professor Jonathan Van-Tam, said:

The RECOVERY trial is an outstanding example of the UK leading the world with an impressive study capable of delivering robust answers to critical questions. Although these data have not yet been peer-reviewed.

The positive findings on dexamethasone follow the disappointing findings on hydroxychloroquine. Together these 2 results illustrate the power of properly conducted clinical trials and the inherent danger of assuming things work without robust data.

Whilst tempting to do otherwise, it is always better to wait for the evidence. On the dexamethasone findings, this is very encouraging because the signal on reduced mortality applies to many of the patients admitted to hospitals and the drug is comparatively low priced and available worldwide.

The UK is a world leader in global science and medicine industries. This British trial will now affect the global response to this pandemic.

This breakthrough has only been made possible through the rigour of world-class and world-leading British life-sciences. The government backed British science from the very beginning of this pandemic and today has proven that this was the right call.

The vital information collected by UK researchers will also be used by other countries to reduce mortality rates worldwide.

The type of drug was initially suggested by the government's expert advisory committee, the New and Emerging Respiratory Virus Threats Advisory Group (NERVTAG). It was then trialled successfully by RECOVERY.

Support from the NIHR Clinical Research Network (CRN) and letters from the UK Chief Medical Officers and NHS England Medical Director Professor Stephen Powis helped to drive recruitment.

Dexamethasone has been demonstrated to have a clear place in the management of hospitalised patients with COVID-19 who are receiving oxygen.

The RECOVERY trial reported the findings of 2,104 patients randomised to dexamethasone in comparison with 4,321 patients randomised allocated to usual standard of care alone. The trial has reported at a dose of 6 mg dexamethasone once a day for up to 10 days or discharge if sooner. No benefit is seen for patients hospitalised and not on oxygen.

There is a 20% risk reduction of mortality for those on oxygen and 35% risk reduction of mortality for ventilated patients.