

## How to make medical transport more sustainable

### Hospital or health system name:

Galician Health Service (Spain)

### Demographic information

As part of the Galician Health Service (SERGAS), the Ourense Health Area serves 92 municipalities with a population of 300,000, comprising one university hospital and two regional hospitals with more than 1,105 beds, 103 primary care centres, and 14 primary care emergency centres. The Ourense hospitals employ 3,600 people. The Ourense province is impacted by an ageing, reducing population. It faces many extreme weather events and often experiences the highest temperatures in Europe.

### GGHH agenda goals

- Leadership
- Energy
- Buildings

### Case study summary

The Galician Health Service has introduced electric ambulances at the Ourense hospitals to address emissions from medical transport. The ambulances perform very well and help to significantly reduce costs, as well as, CO<sub>2</sub> emissions. They are best suited to non-urgent complementary services, such as the transfer of patients between hospitals.

### The issue

At the Galician Health Service (SERGAS), scope 1 emissions account for 14% of the hospitals' total emissions. Medical transport and mobile combustion fall under this category of emissions, meaning that they are under the direct control of the medical sector ([HCWH Europe, 2022](#)). SERGAS is currently working to reduce the emissions from its fleet vehicles, which produce approximately 55.57 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) annually. To achieve this, the Ourense hospitals launched a project to introduce electric ambulances.

## Hospital goal

- To reduce the use of fossil fuel vehicles
- To decarbonise medical transport activities
- To improve air quality
- To adopt eco-efficiency strategies that reduce energy consumption
- To improve medical transportation
- To promote sustainable healthcare

## Sustainability strategy implemented

The Ourense hospitals' involvement in sustainability projects started in the early 2010s with their participation in the project [Hospital2050](#), which aimed to create a more green, sustainable, and energy efficient hospital through a health innovation plan. The Ourense hospitals, together with SERGAS, have participated in a number of sustainability projects and initiatives, including acting as a pilot hospital in the [LIFE RESYSTAL project](#), joining the [European Network of Living Labs](#), developing a circular economy strategy, and carrying out an organic waste project (in collaboration with the University of Vigo). However, until January 2021, the hospitals had no projects to address their carbon footprint related to transport.

## Implementation process

In January 2021, the Ourense Health Area had the possibility to select a new provider for their medical transport. The new contract awarded in May and signed on 8 July 2021, has a duration of three years with the possibility of a further two year extension. The successful company, specialised in medical transport but not electric vehicles, was given time to renew and adapt its fleet, as well as adjust routes and uses to the shorter range of the ambulances. The annual cost of the service is almost €5m.

Complementary medical transport includes all scheduled transports from patient homes to the hospital for various medical procedures, such as radiotherapy, rehabilitation, or haemodialysis, and transfers between the three hospitals of the Ourense Health Area and beyond.

To meet these needs, there are three types of electric ambulances:

1. Life support for individual transport of critical patients
2. Basic support for transfer on a stretcher
3. Collective ambulances for small groups of patients

These three types of electric ambulances were selected based on characteristics and limitations of this kind of transport rather than the specific needs of the hospitals. Electric ambulances are typically used for journeys between Ourense hospitals and for non-urgent patients because the more the ambulances are loaded with patients and equipment, the lower their range. Charging stations were installed in all three Ourense hospitals, but only a small amount of charging stations are available throughout the Ourense province. Consequently, they preferred to use electric ambulances to only cover routes between the three hospitals.

The contract does not ask for a specific number of vehicles but establishes their presence in the three hospitals at certain times. The needs in 2021, considering the uncertain situation due to the COVID-19 pandemic, were established at 175,000 trips/year, of which 80% would correspond to regular transport and 20% would be on demand. Fifteen electric vehicle charging stations were installed for the provision of clean energy vehicles, one station for each hybrid vehicle and two stations for each fully electric vehicle.

## Tracking progress

To measure the project's success, the hospitals compared their electric ambulances with existing ambulances in their fleet, in terms of fuel and financial savings. When using a private charging point, electric ambulances used 97% less fuel, leading to an 80% reduction in CO<sub>2</sub> emissions. Additionally, more than €22 was saved per 102km (the length of a standard ambulance route), which means that there is an excellent economic incentive in addition to the tremendous environmental impact. Between 31 May and 27 September 2022, the two electric ambulances covered 2% of the total distance travelled by the fleet, LPG ambulances covered 6%, and diesel ambulances 92%.

## Progress achieved

- 97% financial savings due to reduced fuel consumption
- 80% reduction of CO<sub>2</sub> emissions

*Please note that the information in this case study was provided by the GGHH member named above. Health Care Without Harm (HCWH) is not responsible for the accuracy of the information/data provided.*

## Challenges and lessons learnt

Electric ambulances represent an environmental improvement and helps Ourense hospitals reduce their carbon footprint. These vehicles are extremely interesting as a complementary service and for the individual transport of patients. They also represent significant economic savings and a rapid return on investment.

Despite their excellent performance, electric ambulances pose a series of challenges:

- They require specific infrastructure with fast charging stations at healthcare facilities and along the routes. It is necessary to improve this network of charging stations in the Ourense region.
- Although the nominal range of these vehicles is 400 km, in reality once the vehicles are equipped and loaded, their range is reduced to approximately 280 km.
- These vehicles require specialised maintenance and qualified workshops that are not widespread in the Ourense region.
- Since May 2022, the fully electric ambulances work in a complementary manner. They are being used for individual patient transfers, but not for collective transport or critical patients.

## Next steps

To improve the efficiency and reliability of electric ambulances, a series of measures can be taken, such as equipping vehicles with a complementary energy source, such as hydrogen. New innovative energy sources, such as green hydrogen, will also enable greater autonomy. As a next step, Ourense hospitals aim to ensure their complementary medical transport becomes 100% electric.

## Links

- [Designing a net-zero roadmap for healthcare](#) (HCWH Europe, 2022)

**Submission date: 01/11/2022**