

## Interview with the Italian Clinical Engineers on the Coronavirus Situation

NOTE: The questions (in italics) were posed by leaders of [ABEclin](#), while the responses were provided by leaders of [AIIC](#).

*Given the impact on health care and the mobilization of the Italian clinical engineering professionals, we would like to know what have been the difficulties that clinical engineering professionals faced at the beginning of the epidemic? And what actions were possible at the time?*

At the beginning of the epidemic, the operational difficulties mainly concerned those colleagues who were busy in the areas most affected in the early days, in particular the hospitals of Lombardy, the region with the capital of the city of Milan.

In the early days there was still no perception of the size of the problem, or at least not everyone could have it, and even though throughout Italy we started to circulate information and news, not everyone immediately had the feeling that it was important to act immediately. So, at the beginning of the emergency the problem was essentially related to the perception of the situation. The peculiarity of Lombardy was the fact that once the first positive case was discovered (Codogno, 21.2.2020) there was an "explosion" of cases (just look at the growth curves of the phenomenon) which proved to be immediately serious. Intensive Care Units very quickly saturated, and it was necessary to start managing very quickly the patients who arrived in the Emergency Room in less serious but nevertheless complicated conditions. This determined the need to quickly set up ventilated places (CPAP etc.) up to new intensive care places. All this was necessary within 5/6 days.

At the beginning, Clinical Engineers were involved in the collection of equipment inside the hospital, because at the beginning everyone's impression was that the emergency could be managed with what was available. As the numbers increased, it immediately became clear that it was necessary to resort to the market and buy new equipment. The explosion in the number of cases has effectively saturated the availability.

The network of Clinical Engineers has allowed the dissemination of information and management needs for the sick, so those in the other regions who were lucky enough to suffer the wave of cases in a second time had time to adapt their facilities and supply some material. But always without knowing if what they were acquiring would have been enough, too little or too much.

At the time it was therefore only possible to react to the emergency with all possible tools (including knowledge of suppliers to be able to collect the equipment) and to share with colleagues, both for any loans and simply to be able to prepare.

At this moment, on a national scale, the other regions have time to prepare even if there is always the doubt of not knowing how many real cases will arrive in their area.

*Currently, with several severe cases and quarantined regions, what are the biggest difficulties in meeting the needs of equipment and services?*

At the moment there are essentially two problems:

1. Saturation of intensive care places and the need to create others, but without the available spaces. Therefore, the layout or functions of hospitals and departments must be reviewed to create new places;

2. Unavailability of equipment (ventilators and monitoring systems) both because the manufacturers do not have an "emergency" production capacity and the adaptation of the production lines required more than 10 days, and because the evolution of the epidemic at the supranational level has led to create constraints and pre-emptions by some states on domestic production which is blocked for their own needs rather than shared abroad.

Instead, we have observed that the variability of the equipment that is provided is not a problem, in the sense that clinicians adapt to what they are faced with, as long as it provides the basic services that are required of the specific equipment.

The greatest difficulties therefore concern the continuous requests to equip our hospitals adequately to cope with Covid-19 patients, both for ordinary hospital stays with the need not to spread the infection, and especially for the most serious patients in Intensive Care Units. Setting up new intensive care places is not only a problem of spaces and availability of suitable rooms (in an emergency like this we can also use rooms that normally would not have all the characteristics normally required for intensive care) but above all the availability of the necessary equipment: ventilators and monitors above all. Clinical Engineers are playing an important role in this, both in recovering all the equipment available in the hospital, for example those used in different departments or those not currently in use, and in receiving new equipment that hospitals are buying and quickly setting up new intensive care beds. And we must not forget that in any case, even in the present coronavirus-related emergency, the rest of the hospital activities do not stop: some scheduled activities have been suspended, but we must continue to guarantee assistance to hospitalized patients and the management of all emergencies.

***What advice would you give to clinical engineering professionals in Brazil/in other countries, so that they can prepare for what's to come?***

The main advice is to avoid waiting until the situation is so serious that you have to act in a hurry and in an emergency. We must immediately be ready and start to equip hospitals with new intensive care places, even temporary; you must immediately get the necessary equipment, and in this the collaboration with the manufacturers (local and multinational) is important. Clinical Engineers must be immediately involved in the working groups, both in the hospital and in regional and national institutions, to bring in those discussions the competence related to electromedical equipment, which in this situation is of fundamental importance. Policy makers need the skills of technicians to make the right decisions and act properly.

The only problem is that the epidemiological curves are far from known and certain. This means that it is not possible to determine upfront how many places and where they will be needed. There is a risk, if you move on the emotional wave of over-riding, while if you are too rational then you risk finding yourself with water at your throat and not being able to meet the need.

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ABEclin

Eng. Alexandre Ferreli Souza, President

Eng. Ricardo Maranhão, Exec Vice-president

Eng. Bruno Roma, Vice-president

AIIC

Ing. Lorenzo Leogrande, President

Ing. Stefano Bergamasco

Ing. Umberto Nocco, Vice-president