

# Diabetes assistance before, during and after Covid-19 in Ferrara, Italy

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## Abstract

The COVID-19 pandemic has profoundly changed people's habits and social organization, including the care models of people with chronic diseases. Diabetes care in Ferrara is based on Integrated Care Protocols (ICP) in collaboration with General Practitioners (GPs). The sudden arrival of the Covid-19 pandemic has resulted in the suspension of most of the planned health activities. The Diabetes Services have mainly dedicated themselves to communicating by telephone with their clients to suspend appointments and monitor their health conditions, accepting only urgent situations that could not be managed by telephone. The psychosocial aspects of people with diabetes have led to the fear of contagion taking into account the greater risks related to age and comorbidity and the aspects of loneliness and reduction of social contacts. After the lockdown, the health systems are reactivating the suspended treatment paths even if with all the measures to avoid spreading the infection. Consequently, the assistance activities will be quantitatively less numerous to apply the safety criteria. E-health gives the opportunity to customize monitoring and assistance and to configure a profile of the monitored parameters aimed at revaluations of care in the clinic only when necessary, rather than at predetermined deadlines.

## Keywords

Diabetes, integrated care protocols, e-health, COVID-19

The COVID-19 pandemic has profoundly changed people's habits and social organization, including the care models of people with chronic diseases. Social distancing, in addition to the greater risks of complications for the elderly and those with comorbidities, as well as the new priorities of the health services in the management of COVID-19 patients, have blocked the planned care paths of people with diabetes. The possible consequences in terms of health will emerge from the analyzes that will be carried out after the pandemic has ended, but certainly the abrupt change in habits and psychological status with respect to one's physical integrity cannot fail to have left their mark.

The phrase most often heard is “nothing will be as before”, both for the feeling of defeat of a humanity that has demonstrated its fragility in the face of such an event, as well as for the discovery of technological solutions and solidarity values that can improve the future.

## Before

Since 2000, diabetes care in Ferrara has crossed a significant organizational change with respect to the

changing availability of resources and the epidemiological rise. In the last 20 years, we have implemented four successive operative Integrated Care Protocols (ICP) in collaboration with the General Practitioners (GPs), with an obvious impact on the operating modes, on the care objectives and assistance protocols as a function of the guidelines of ICP.<sup>1</sup>

The Diabetes Integrated Care in Ferrara, even if with vicissitudes, has the merit of having opened the new integration course between healthcare sectors, focusing on the enhancement of the Territorial Medicine and on the comparison between health professionals, trying to overcome the barriers historically erected between Hospital Specialists and General Practitioners. Ferrara experience has the characteristic

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of having, since its inception, focused on the provincial scale dimensions rather than on local projects, as in other realities.<sup>2</sup>

The result was a progressive allocation to the GPs of the clinical responsibility as regards the management of the outpatient's disease to the GP, according to the principles defined by a shared protocol, for people with diabetes mellitus type II in a metabolic stability and reduced impact of complications.

Following the Integrated Diabetes Care<sup>1</sup> and the increase in prevalence, the activity of diabetes specialist, evaluated over time, has been influenced by the ICP more in the quality and quantity while the proportion of patients treated by GPs has progressively increased up to 50% of all people with diabetes.<sup>1</sup>

The Diabetological Service in the province of Ferrara has developed a structured Therapeutic Education program, in collaboration with the local Diabetic Association, which, besides the individual educational approach, provides for the regular running of group education sessions with the Diabetes Conversation Maps<sup>®</sup> tool.<sup>3</sup> In addition to this, a group psychological support path has been active, while for the practical and residential educational events have been held on the themes of food education and the practice of physical activity.

The Diabetology Service and the local Diabetes Association organize every year a residential camp for adult with diabetes, where, through the participated experiences of patients, the correct lifestyles are encouraged both for physical activity and for healthy eating.

The "Basic Encounter Group,"<sup>4</sup> dedicated to people with diabetes and their families, also takes place every two weeks, with the support of a psychotherapist and an experienced nurse.

The educational path for diabetes self-management, in addition to the integration of many professional skills, was one of the responses to the progressive increase in the prevalence of diabetes in these territories.

The application, sharing and maintenance of the Diabetes Integrated Care Protocol (ICP) was not easy, due to the difficulty in overcoming the divisions between professional categories and historical customs. Therefore, significant non-uniformities still remain in the professional resources availability, in the collaboration networks, in the levels of involvement of the clients, in the systems for monitoring the welfare objectives and the outcomes.

## **During**

The sudden arrival of the Covid-19 pandemic (on March 9) has resulted in the suspension of most of the planned health activities (including those dedicated

to chronic diseases), except those with an urgent nature or related to procedures for the treatment and administration of drugs in the healthcare facility (e.g. Oncology).

The Diabetes Services have mainly dedicated themselves to communicating by audio telephone call with their clients to suspend appointments and monitor their health conditions, accepting only urgent situations that could not be managed by telephone. The same for patients assisted by GPs.

The electronic diabetic record, although it allowed telemedicine interventions, was not particularly helpful for IT troubles and patients' training needs. Whereas no problem arose for access to drugs and devices distributed by public pharmacies and hospitals, also with the support of the electronic prescription.

All planned educational activities have been suspended.

Patient associations, as well as other groups of people, have partially alleviated the effects of isolation and social distancing, sharing ways of behavior, information, solutions to health and daily organization problems. The most effective means have been social networks, to communicate easily with people, in addition to the telephone. To overcome the impossibility of carrying out the usual physical activity, free online services have been developed to perform gymnastics, Pilates and Yoga at home with a follow-up of a several hundred participants.

The associations of Doctors Diabetologists have provided consultancy services and telephone support for people with diabetes.

For people under home isolation measures, the voluntary associations provided for the delivery of food products and drugs. In these cases, the state of health was monitored by the General Practitioner and, if necessary, by the home intervention of the U.T.A.P. (Unità Territoriali di Assistenza Primaria).

Access to the hospitals and clinics of the GP for reasons other than suspected pneumonia COVID-19, were significantly reduced, as well as the health agenda by the hospitals.

The pandemic caused delays in 64% of surgeries, reduced new diagnoses of cancer by 52%, halved hospitalizations for heart attacks while mortality from heart attacks tripled from 4.1% to 13.7% in this pandemic period. In addition, it reduced the number of hospitalizations for heart failure, heart rhythm abnormalities.<sup>5</sup>

Therefore, following a different level of priority, the health risks of the population, in particular of the most fragile subjects, have increased not only due to the COVID-19 threat, but also due to the reduction of accessibility to many of the treatment pathways.<sup>6</sup>

A recent study made by University of Ferrara, School of Medicine, showed that diabetic patients with COVID-19 are at higher risk of ICU admission (OR: 2.79, 95% CI 1.85–4.22,  $p < 0.0001$ ) and showed a higher mortality risk (OR 3.21, 95% CI 1.82–5.64,  $p < 0.0001$ ).<sup>7</sup>

The psychosocial aspects of people with diabetes have led to the fear of contagion taking into account the greater risks related to age and comorbidity and the aspects of loneliness and reduction of social contacts, only partially compensated by telephone contacts and social networks.<sup>8</sup>

## After

At the end of May, 86 days after the first entry of a COVID-19 patient into the Ferrara hospital, no new cases were recorded and the last ICU patient was discharged. After about three months of lockdown and social distancing, the population is preparing to recover its life patterns. The health organizations are reactivating the suspended treatment paths even if with all the necessary measures to avoid spreading the infection. Consequently, the assistance activities will be quantitatively less numerous to apply the safety criteria against Covid-19. Therefore, it will be necessary to study new solutions that allow to resume the health care pathways of people with chronic diseases, taking into account that for the moment accessibility is reduced.

Telemedicine can be an opportunity to develop and spread, improving IT infrastructures (technologies, security, privacy and simplification) and expanding user training.

The logic of the control at predefined time intervals must also be reviewed, replacing it with follow-up in remote assistance (e.g. managed by trained nurses and with artificial intelligence support) through which to define the control timing in the clinic or at the patient's home.

The health devices that allow the detection of useful health parameters are numerous and at sustainable costs, their use can reduce people moving.

Reducing mobility is also a value in post-pandemic times, due to its positive effects in economical and environmental terms.

E-health (in terms of an electronic diabetes folder system interfaced with Personal Health Record and with an interface with devices such as Continuous Glucose Monitor, oximeter, pedometer) gives the opportunity to customize monitoring and assistance and to configure a profile of the monitored parameters aimed at reassessing care plans only when necessary, rather than at predetermined deadlines.

Awaiting the Covid-19 vaccine, the precautionary measures in particular in healthcare facilities will be

maintained and the risk of contagion will remain latent, therefore, even if the lockdown period is over, the social distancing measures will be maintained. So citizens' responsibility and self-management will make a difference in terms of personal and community health.

In view of the population vaccination for Covid-19, it is desirable that, especially for people with diabetes and other chronic conditions, the sensitivity of doctors and patients towards other vaccinations increases (e.g. pneumococcal pneumonia, Herpes virus, flu).

For social events, it will not be easy to restore normalcy, however with proper precautions, it is necessary that this important issue receive adequate solutions. Particularly for people with diabetes it is desirable to resume individual and group educational meetings for self-management of diabetes as well as opportunities to carry out physical activity group and promote healthy eating with events. Self-management education can find support and continuity even with the use of IT platforms and in any case, it is crucial in reducing the use of health support and in maintaining the stability of the disease.

## Remarks

Covid-19, after its debut in China, has shown its effects in Italy, among the first European countries. The direct and indirect consequences have been significant and, even today, it is not possible to outline the real dimensions on the socio-sanitary and economic aspects. Countries were not prepared for this and organizational choices were sometimes not timely and effective.

From this experience, for which the timing of the conclusion is not known, it is possible to draw some lessons and to prepare solutions both for eventual successive waves of infections and for socio-economic events with limitations of contacts between people.

1. The reduction in accessibility to health services, for people with chronic diseases, can be more easily overcome if people reach good self-management skills in treating disease, therefore continuous educational support of the patient and his caregivers must be part of the path treatment of chronicity, with periodic checks of skills and motivation.
2. Access to telemedicine solutions was limited by the levels of competence of the patients and sometimes of the healthcare professionals as regards the IT media. It is necessary to invest more in IT support by health services with capillary training programs for citizens to promote these very useful communication channels, even in the absence of social and health emergencies.

- Social distancing has highlighted the importance of care solutions carried out at the patient's home, rather than in clinics or health facilities or assisted residences. It is therefore necessary to strengthen the decentralization of care, identifying, where possible, the patient's home as a safe, sustainable and preferred place for the patient. However, the delegation of aspects of care and assistance requires a continuity of support from health professionals both in presence and in remote assistance.

## Comments

The Covid-19 pandemic, like the events that have marked the history of humanity, will change the perception of many aspects of life and will probably be the engine of virtuous changes. If, on one hand the sense of integrity and the certainties of health offered by modern medicine are partially compromised, on the other hand, the concept of health based on behaviors and lifestyles could take on a renewed value. The role of communication supported by IT has been enhanced, which, often used for futile needs, has instead allowed the maintenance of contacts while respecting social isolation. The experience of telecare, made in diabetes clinics, will have developments as it may be the answer to the shortage of health professionals with respect to the growing prevalence of diabetes. An opportunity may be the activation of filter functions, via telemedicine, managed by the nurses of the diabetes team.

E-health, as well as the computerization of diabetes records, is a virtuous process which, if started, can reach significant goals, (e.g. systematic weight monitoring, physical activity, blood pressure, blood glucose, etc.) as well as to enhance the nurses' function of actively recalling the most fragile and less motivated people, who often get lost in the maze of bureaucratic health complexity. Of course, direct contact cannot be replaced, but e-health can integrate with it and make the care team closer, more reachable and therefore offering more safety to the patient.

The prevention of the spread of the infections has obviously been related to some simple measures such as social distancing and simple hygiene rules. It is desirable that, from this, we may have learned that quality of life and health outcomes can be pursued with simple virtuous behaviors (e.g. healthy nutrition, regular

physical activity, abstention from cigarette smoke, drugs, alcohol, living in a healthy environment).

Therefore, preventing actions are effective, low cost and to function they must be individual assets that should not be imposed, but become part of our awareness.

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