



4th Ad-hoc-Statement, 27 May 2020

Coronavirus Pandemic: Medical Care and Patient-Oriented Research in an Adaptive Healthcare System

Preliminary remarks

The actors of the healthcare system have reacted with flexibility to every outbreak during the coronavirus pandemic. As a result of the measures taken, Germany has managed the situation relatively well so far in international comparison.

In the ongoing coronavirus pandemic, it is difficult to make reliable predictions about the future course of events: for instance, it cannot be predicted whether and when effective therapies and/or a vaccine will be available. Recommendations for action must take this uncertainty into account and outline future prospects accordingly. It is imperative to link the resumption of public and economic life with the medical control of the coronavirus pandemic.

As German National Academy of Sciences, the Leopoldina provides independent science-based policy advice on issues relevant to society. The academy elaborates interdisciplinary statements based on scientific knowledge and presents recommendations for action. Decision taking is the task of democratically legitimised politics. Medical and life science topics are a major focus of the Leopoldina.

With this statement, the German National Academy of Sciences Leopoldina issues a fourth ad-hoc-statement on the coronavirus pandemic in Germany. The first three statements focused on acute healthcare policy measures in dealing with the pandemic, and on psychological, social, legal, educational and economic measures that may contribute to a gradual return to societal normality.¹ Building on the recommendations given so far, the present statement focuses on aspects of patient-oriented medical and care services for all patients during an ongoing pandemic. This statement also presents measures that lead to a more robust and adaptive healthcare system.

The working group set up by the Leopoldina consists mainly of clinical physicians from institutions of academic medicine, researchers, and persons with organisational responsibility in medicine and care. Over the past weeks of the pandemic, many members of the working group have been working intensively in patient care; others have been responsible for data analysis and for implementing measures or have been developing concepts at various levels for the resumption of broad medical care. The members of the working group work on an honorary basis for the Leopoldina.

¹ The first three statements by the German National Academy of Sciences Leopoldina on the coronavirus pandemic can be retrieved at <https://www.leopoldina.org/en/press-1/news/ad-hoc-statement-coronavirus-pandemic/>.

Summary

In the past weeks, the coronavirus pandemic has posed extraordinary challenges to the German healthcare system. Precautionary measures against infection with the largely unknown SARS-CoV-2 virus as well as the rearrangement of the system to be able to handle a potentially large number of severely ill COVID-19 patients were implemented rather swiftly and effectively.

The confrontation with a new viral disease has highlighted the importance of a healthcare that is both patient-oriented and research-based; university medicine is particularly crucial in this: not only for the rapid development of options for prevention, diagnostics and therapeutics, but also for the establishment of adequate structures and the sharing of knowledge with other actors in the healthcare system.

Due to the rearrangement of medical care and the expansion of capacities to cope with the pandemic, ambulatory and stationary care for patients with other illnesses has, however, faded into the background. Even important preventive measures had to be interrupted. The same applies to research activities. Now, needs-based preventive, diagnostic and therapeutic measures for all patients need to be resumed promptly and, whenever possible, to their full extent. In the long term, the healthcare system should be set up to guarantee good care for patients and research activities at all levels, even in times of extraordinary challenges.

In order to ensure healthcare for all patients in times of a dynamically unfolding pandemic it is necessary to: install capacities; establish a regional and in-hospital early warning system for SARS-CoV-2 infections; secure personnel, rooms and technical reserves for the treatment of COVID-19 patients when required; implement science-based, targeted testing strategies, and particularly strengthen public confidence in a safe and patient-oriented medical treatment. It is crucial to provide patients with high-quality care and health services by promptly integrating new research developments.

It is the responsibility of the state to ensure healthcare in times of crisis and a quality-assured and science-based medical treatment for the population. This is especially provided by university hospitals. The working group of the German National Academy of Sciences Leopoldina recommends taking the following general aspects into account for the further development of the healthcare system:

1. Ensure high-quality and ethically responsible care for all patients; this must be science-based and closely linked to the findings from translational and clinical research;
2. Determine defined and differentiated areas of responsibility for each healthcare provider in a region according to the level of care expertise;
3. Provide adequate numbers of qualified medical and care staff;
4. Guarantee comprehensive digitisation and structured cross-sectoral connectivity of all hospitals and of ambulatory care;
5. Ensure the realisation of these tasks in the long term, for example by supplementing the current diagnosis related groups (DRG) reimbursement with structural components.

A healthcare system that is highly adaptable to current and future challenges and in which the public health service and the ambulatory and stationary sector work together well must be the goal.

The confrontation with a new viral disease has shown the great importance of a publicly funded healthcare system and of an interconnected and research-based healthcare. When dealing with new forms of diseases, especially the collection of research data and the direct input of research results into prevention, diagnosis and therapy are essential.

In the coronavirus pandemic, the actors in the healthcare system had to react swiftly and flexibly to the respective outbreaks in a region. In some cases, structures have emerged which have led to a clear division of tasks in accordance with the strengths and foci of the respective healthcare facilities. Such a mixture of co-ordination and freedom of action has so far contributed to a relatively sound management of the pandemic in Germany in international comparison.

To be able to face present and future challenges, the current healthcare system must be developed further: a patient-oriented, quality-assured and not primarily profit-oriented system is needed, which appreciates all employees, integrates innovation and digital solutions, and which is overall highly resilient based on its close linkage to basic and translational research.

In the short and medium term, how can general medical care be resumed under pandemic conditions?

The reorganisation of medical care to treat the potentially high number of severely ill COVID-19 patients in these past weeks has led to a situation in which many patients with other, sometimes serious illnesses could not be examined and cared for at all, or only to a limited extent. This includes patients with cardiovascular or oncological diseases and those with chronic diseases, who need regular examinations and highly specialised care. In addition, many research activities on other diseases were interrupted.

Now it has to be ensured that all patients receive appropriate care again and that their trust in a good and safe treatment is strengthened – in particular in times of an ongoing pandemic threat. Particular attention should be paid to patient groups with special needs, such as children, elderly, chronically ill, mentally ill, people with physical or mental disorders or dying persons. The psychosocial needs of all those affected and their preferences must also receive greater consideration. Good communication among specialists, between specialists and patients (with the involvement of self-help organisations as well) and with the general public is essential.

For a **comprehensive resumption of general medical care**, it is necessary to:

- Reintegrate all patients with acute and chronic illnesses into the care system and provide care and preventive measures, regardless of the further development of the pandemic;
- Successively open stationary areas, ambulatories at hospitals, day clinics and diagnostic units for all patients;
- Protect patients and staff as best as possible from infection;
- Safeguard the rights of patients – especially of persons with special needs who have a high risk of disease or who cannot assert their interests themselves;
- Guarantee at all times the legal representation of patients who are unable to give consent.

The following **conditions** should be met in this respect:

- Functioning networks with a tiered (regional, national and Europe-wide) care of COVID-19 patients;
- Provision of sufficient stationary, ambulatory and post-stationary capacities for the care of COVID-19 patients and the adjustment of patient occupancy in healthcare facilities, depending on the regional development of infection rates, including the use of digital early warning systems;

- The central digital registration and regional co-ordination of all operational treatment units (infrastructure, technology and personnel) and reserve capacities, not only for intensive care;
- Ensuring adequate personnel and technical equipment, including the supply of protective equipment, drugs and medical products, if necessary via a central reserve;
- The continuous training of personnel in dealing with the course of infection, new findings on the prevention, diagnosis and therapy of COVID-19, including possible concomitant and secondary diseases, and ethical conflicts in crisis situations;
- The expansion of digitisation and digital skills (e.g. telemedicine and consultation services, disease monitoring at home, data availability, integration and exchange), also to reduce the possibility of direct infection;
- Close networking of translational research with patient care and monitoring of all COVID-19 patients, including their post-operative treatment and care, in order to better understand the infection and its consequences and to ensure rapid implementation of new research findings for prevention and patient treatment;
- An improvement of the data situation on the possible risks of children and the elderly as well as the very heterogeneous so-called risk groups; and
- The implementation of concepts and guidelines for the equitable distribution of scarce goods, taking ethical expertise into account.

To **control the occurrence of infections in hospitals**, the following is crucial:

- The definition of rooms, paths and processes that enable the structural, functional and organisational separation of the care for COVID-19 patients, suspected cases and non-COVID-19 patients. These concepts should be flexible and scalable in both directions;
- The further development and consistent implementation of hygiene concepts in hospitals to prevent infections among patients and employees;
- The integration of ethical expertise, e.g. in crisis response units;
- The provision of adequate equipment and training for qualified (care) personnel, especially in the intensive care sector; and
- The development of scientifically monitored, targeted and comprehensive testing strategies² for healthcare facilities, especially for testing patients and personnel, not only in hospitals but also in medical practices and care facilities. The aim is to detect infections at an early stage, to limit them and thus to create trust. Close and continuous cooperation between the public health service and university medicine, other clinical care institutions, laboratory medicine and general practitioners is important for implementation.

How to organise a healthcare system in the long term?

As this crisis clearly shows, a healthcare system that is an integral part of the provision of public services cannot be guided by the economic standards of a free, competitive economy. The design of

² This strategic testing also appears to be suitable for other areas of public, social and economic life. The aim is to establish a kind of radar system for new infections through smart sampling. It is important to identify areas where contact with infected persons is highly likely to occur. The data and findings obtained should be compiled in a database, presented transparently and communicated.

an adaptive healthcare system that can also cope with exceptional situations is a responsibility of the state.

In every situation, it should be ensured that the population can be provided with adequate and quality-assured care and that no incentives are created for overuse or misuse. There must be a clear distinction and attribution of levels of care and treatment conditions. Efforts to reform the hospital system in this direction have not become obsolete in the current crisis.³

For the further development of the healthcare system, **structural aspects and governance questions** are of particular relevance:

- Establishment and consolidation of regional care and research networks with defined levels of care for hospitals of all providers and a corresponding patient management system. University medicine plays a central role in this process with its theoretical and clinical areas and the linkage of research and care. In addition, it must maintain extensive laboratory capacities and technical facilities for specialised treatments as well as specific expertise. University medicine must connect with all medical care providers, for example by expanding telemedicine, and thus provide supra-regional consultation and co-treatment;
- Close connection of the stationary and ambulatory sector in a region; expansion of ambulatory treatment at academic medical facilities, especially for patients with complex and rare diseases; close, flexible cooperation with other medical care providers such as general practitioners and the public health service;
- Strengthening of the public health service and its integration into regional networks. Overall, the areas of public/global health, clinical infectiology and hygiene/hospital hygiene must be given greater emphasis;
- Rapid expansion of digitisation. This requires the standardisation and compatibility of systems, and the protection of digital infrastructure and data. One of the main conclusions from the corona crisis is that rapid access to latest and valid data, their integration and visualisation are crucial for the management of healthcare, especially in complex situations;
- National and international interconnection of basic medical research, translational and clinical as well as “data science” research. This must be ensured, for example, through “clinician scientists”, translational centres, clinical study centres and a targeted cooperation with partners from industry;
- Further development of the DRG system: towards a system that retains the benefits and, at the same time, strengthens elements of structural development (e.g. by defining levels of care), and reserves sufficient funds. In this way, fundamentally false incentives in the current system can be corrected and avoided, rare and complex diseases can be better treated and the accumulation of reserves is made possible (e.g. additional intensive care and infection areas, emergency medicine).

The **medical and care personnel** is crucial for the functioning of patient-oriented and high-quality care and effective disease prevention. In order to ensure that healthcare facilities are adequately staffed in the long term, also in view of demographic change, appreciation by society, adequate remuneration, attractive and needs-based training, and good working conditions are needed. This applies equally to non-medical personnel. Academic medicine must continuously develop further basic and advanced training for all those involved in the healthcare system, incorporate new findings and collaborate with all training institutions. In that context, university medicine does have a special role in the overall system.

The pandemic has revealed a number of strengths and weaknesses of the German healthcare system. In this fourth ad-hoc-statement of the German National Academy of Sciences Leopoldina on

³ Cf. for example “Zum Verhältnis von Medizin und Ökonomie im deutschen Gesundheitssystem. 8 Thesen zu Weiterentwicklung zum Wohle der Patienten und der Gesellschaft”, Leopoldina Diskussion No. 7, 2016.

the coronavirus pandemic, measures have been proposed that contribute to the advancement of a healthcare system which can react flexibly and robustly to upcoming challenges, enable new medical developments and innovations, and ensure patient-oriented medicine.

Overall, what is needed is a critically-thinking science-based medicine that develops innovative strategies for patient care and is committed to the common good.

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