The Health Insurance Fund Participates in Controlling the Epidemic: Insights from German Experience in Dealing with the COVID-19 Pandemic

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Abstract: To reveal the importance of the participation of the health insurance fund in the prevention and control of serious infectious diseases, this research retrospectively analyzed the case of the German statutory health insurance fund in response to the COVID-19 epidemic. Based on Germany’s practical experience, this research offers a strategy idea for other countries with a social health insurance system, aiming to ensure that the health care system does not collapse rapidly due to medical resource shortage in the event of a pandemic. Firstly, this research conducted a documentary analysis to systematically collate the temporary and additional coverage measures provided by the health insurance fund from January to the end of July 2020, which sheds light on the pivotal role of these funds in epidemic prevention and control. Secondly, this research used comparative analysis to examine the time sequence of implementing these different types of coverage measures in the progression of the epidemic to illustrate how the health insurance fund adjusted its response measures. The health insurance fund was actively involved in the development of core strategies for combating the epidemic when it broke out, by taking part in joint multisectoral consultations. By using payment instruments flexibly, the fund led the implementation of epidemic prevention and control measures, as it could allocate health resources quickly and efficiently in emergencies. Furthermore, the health insurance fund played a critical role in transmitting information on the epidemic and guiding the insured to take appropriate protective measures. By fulfilling its role in health promotion, particularly in the area of health education, the fund provided important complementary and synergistic contributions to the prevention and control of the spread of infectious diseases. In summary, this research provides a new model for other countries for mobilizing a multi-sectoral response to infectious disease prevention and control, and emphasises the key role of the health insurance fund in responding to major public health crises. Keywords: health insurance fund, the epidemic prevention and control, decision-making, payment instrument, cooperative participation

Introduction

For a long time, it has been generally perceived that the health insurance fund is primarily responsible for providing payment support services for the medical diagnosis and treatment of sick insured such as the purchase of surgical services and the reimbursement of the cost of pharmaceuticals for the insured. However, when a pandemic strikes, these traditional services no longer seem to meet the needs of the insured. In the event of a pandemic, although the health insurance fund can provide payment services for special cases such as reimbursement for nucleic acid testing and vaccinations in China during the COVID-19 pandemic, this response alone is insufficient. At present, the emphasis on the active participation of all sectors has become one of the important strategies in responding to infectious diseases. There is an urgent need to ensure the availability of medical resources in a pandemic when the health care system collapses at short notice due to a run on resources. In addition to providing payment services, what else can the health insurance fund do in the event of an epidemic? As a member of the many sectors participating in the response to the epidemic, what services can the health insurance fund provide in ensuring the efficient use of health care resources?
In fact, the experience of the German statutory health insurance fund in responding to the COVID-19 pandemic seems to provide a useful insight. In the event of an infectious disease outbreak or pandemic, the health insurance fund may not only continue to play a major role in providing medical coverage for insured, but may also provide active support in preventing the spread of infectious diseases as well as developing public health policies related to infectious disease control. This research focuses on the contribution of the German statutory health insurance fund in the epidemic prevention and control, in order to explain how it effectively manages health care resources and actively maintains the health of the society in specific situations.

**Materials and Methods**

**Research Design**

The current research is a typical case study. The German statutory health insurance fund was chosen as the study object for two reasons. On the one hand, Germany was relatively successful in responding to the COVID-19 epidemic. On the other hand, the German statutory health insurance system has a well-established medical coverage structure. Given the lack of knowledge about unknown infectious diseases, including disease prognosis and viral virulence, early engagement and intervention are important and positive for epidemic prevention and control management. Therefore, this research collected data from January to the end of July 2020 as a timeframe for investigating the involvement of the health insurance fund in the prevention and control of epidemics, which coincides with the outbreak of infectious diseases to the early stages of the pandemic.

To explore the mechanisms by which the health insurance fund participated in the prevention and control of the epidemic, this case study retrospectively analyzed the main practices of the German health insurance fund during the critical period which lasted from the outbreak of the infectious disease to the early stages of the COVID-19 pandemic in terms of both the strategy content and response time, including what kind of services and support were provided to different insured and health care providers respectively, when were these measures introduced, etc. Documentary analysis was employed to meticulously examine the temporary and additional coverage measures during this period, shedding light on the pivotal role of the health insurance fund in the prevention and control of the epidemic. Furthermore, comparative analysis was used to discuss the chronological implementation of these different types of measures during the progression of the epidemic, revealing the guidelines for adjusting each type of coverage strategy.

**Data Collection**

All documents on guiding the coverage services about epidemic prevention and control provided by these funds were obtained from publicly available documents on the website of the National Association of Statutory Health Insurance Funds (GKV-Spitzenverband, GKV-SV), the Federal Joint Committee (Gemeinsamer Bundesausschuss, G-BA), the Evaluation committee (Bewertungsausschusses, BA), the National Association of Statutory Health Insurance Doctors (Kassenärztliche Bundesvereinigung, KBV) and other organizations. Other documents that describe the specific and personalized services in the epidemic provided by the various health insurance funds are available on their websites. Should the aforementioned websites undergo maintenance that affects the availability of these documents, the Wayback Machine can be utilized to retrieve archived versions.

The other data collected for this research, which includes those reflecting the progress of infectious diseases and health expenditures during the epidemic outbreaks, was derived from publicly available information from WHO, OECD, and the German Federal Statistical Office (Statistisches Bundesamt). The progress of the epidemic was reflected in the number of newly diagnosed COVID–19 cases released by the WHO.

**Coding and Classification**

During this particular period, the GKV-SV opened a section on its website for the uniform publication of policies and guidelines on the prevention and control of infectious diseases. Since most of the documents were already categorized and organized when they were published on the website, it was relatively easy to collect and analyze the data. On this basis, this research directly used axial coding to integrate these documents into 16 groups from six aspects related to...
health care services, such as outpatient care, home care, inpatient care, treatment of special diseases, response to public health emergencies, health screening, and disease prevention.

Then, these 16 groups were allocated to the following five categories using the selective coding method:

(I) Measures for early discovery of the infected cases.
(II) Measures for reducing the risk of patient-doctor contact.
(III) Measures to ensure that insured have access to medical care, treatment, prevention, rehabilitation, etc.
(IV) Measures to safeguard doctors, health care institutions, drug suppliers and other health care providers.
(V) Individualized measures for prevention and control of the epidemic taken by the various health insurance funds.

The first four categories of measures were categorized on the basis of the most recent WHO guidelines on the COVID-19 Epidemic Prevention Strategy\(^3\),\(^4\) and were universally implemented for all health insurance funds. Each category of measures corresponded to a key component of the WHO strategy to deepen our understanding of the positive role of the health insurance fund in the prevention and control of the epidemic. The first category of measures corresponded to the early detection and treatment of the WHO strategy, the second to cutting off the transmission routes and protecting vulnerable populations, the third and fourth provided a response to the requirement to ensure the continuity of health services.

While following the above generic measures, some health insurance funds flexibly introduced individualized measures to try to reduce the risk of further spread of the pandemic, which we have categorized as Category V.

Temporal Sequence Analysis
The key time points, including publication date, adjustment date, and end date, were recorded in detail for each group of measures. Based on these data, a time-progress figure showing the progress of the implementation of these 16 groups was created. The implementation time-progress figure of these strategies was juxtaposed with a curve depicting the concurrent trajectory of the epidemic progression, facilitating a comparative analysis to elucidate the impact of diverse strategic approaches at various stages of epidemic prevention and control.

Results
Among European countries, Germany demonstrated remarkable efficacy in preventing and controlling this pandemic in the early stages of the outbreak. According to the WHO statistics by the end of July 2020,\(^5\) the mortality from COVID-19 infection in Germany was relatively lower than in other European developed countries. The cumulative mortality was 4.38% in Germany, which was lower than the European average value by two percentage points. It was also far lower than the UK’s mortality of 15.22% and France’s mortality of 17.26%. In terms of financial investment, there was a surge in health expenditure in European countries because of the sudden outbreak of the COVID-19 epidemic in 2020 according to the OECD\(^6\). Health expenditure as a share of gross domestic product in Germany increased by 8.55% from 2019, while in France and the United Kingdom, it increased by 9.1% and 22%, respectively. (Table 1) The effective control of the outbreak with relatively low health expenditure demonstrated the efficacy of the measures taken by Germany in response to COVID-19.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Expenditure on Health in Germany, France and the UK from OECD</th>
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<tr>
<td></td>
<td>Share of Gross Domestic Product (%)</td>
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<tr>
<td>France</td>
<td>11.5</td>
</tr>
<tr>
<td>Germany</td>
<td>11.2</td>
</tr>
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<td>UK</td>
<td>9.7</td>
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Germany outperformed other European countries in the prevention and control of the pandemic due to three primary reasons. First, Germany enjoyed the dividend brought by a relatively higher medical resource distribution.\(^7\)\(^-\)\(^10\) Second, the German government took early and hard action to tackle the spread of infection, including large-scale nucleic acid tests and banning collective activities of two people and above.\(^11\),\(^12\) Finally, and most importantly, the German health insurance fund participated in preventing and controlling the epidemic. Regarding how the health insurance fund is involved in the prevention and control of the epidemic, it is evidenced in two aspects as follows:

**Responding to the General Strategy for Epidemic Prevention and Control in Terms of Specific Content of the Coverage Measures**

From January 2020 to the end of July 2020, the health insurance fund implemented a series of measures to prevent and control the infectious disease. These measures were categorized into 16 groups as described in the previous methodology, and further subdivided into five categories based on the principle of infectious disease prevention and control. (Table 2) In terms of content, these 16 groups of selected measures covered all aspects of health care services, including outpatient and inpatient care, home health care services, disease prevention and health screening, which were previously covered by the health insurance fund, as well as temporary coverage measures taken in response to public health emergencies. In terms of service targets, these measures not only covered the insured but also benefited a wide range of health care service providers, including doctors, nurses, midwives, drug suppliers, hospitals, rehabilitation clinics, etc. Therefore, they comprehensively showed the efforts made by the health insurance fund for the prevention and control of the epidemic at special times.

Since February 2020, the German government promoted the SARS-CoV-2 nucleic acid test on a large scale, with full reimbursement of the costs by the health insurance fund.\(^13\),\(^14\) This measure aligned with the previously defined Classification I and demonstrated the commitment and action of the health insurance fund to actively work together with the government during the epidemic. Of the sixteen groups of strategies, about 62.5% were classified as Classification II. This indicated that most of the measures implemented by the health insurance fund in that period focused on the strategy of “cutting off the transmission route” to ensure that the vulnerable population was adequately protected. Nevertheless, this did not mean that the medical needs of the insured were restricted or impeded. In fact, around 68.75% of the measures fell into category III, which was designed to ensure that the insured had access to the necessary services for treatment, rehabilitation, etc., during special periods. In addition, classification IV contained 31.25% of measures designed to provide protection for health care providers.

The application of those individualized measures, i.e., Category V, was very limited, covering only some of the elements in Group 13. For example, telephone or online consultations were offered in lieu of face-to-face communication following the closure of customer service centers. This also followed the requirements of the WHO strategy to reduce the risk of disease transmission. Most statutory health insurance funds, such as general local health insurance funds (Allgemeine Ortskrankenkasse, AOK), company health insurance funds (Betriebskrankenkassen, BKK), guild health insurance funds (Innungskrankenkassen, IKK), agricultural health insurance (Landwirtschaftliche Krankenkasse, LKK),\(^15\)-\(^18\) had promptly set up a special column on the website to offer effective and practical personal protection guidance. The contents of guidance included advice on avoiding collective activities, methods of enhancing personal protection, and seeking early treatment after being infected by SARS-CoV-2 virus. It showed that the health insurance fund was communicating timely information about the epidemic and how to prevent and control it to the insured based on the fund’s duty to provide health education. These personalized measures responded to the WHO’s proposal to mobilize all sectors to participate in the control of infectious diseases.

**Responding to the Progression of the Epidemic in the Timing of the Implementation of the Coverage Measures**

As shown by the timing of the implementation of coverage measures (Figure 1), the participation of the health insurance fund in the prevention and control of the epidemic was characterized by early intervention and timely adjustments. Most
<table>
<thead>
<tr>
<th>Num.</th>
<th>Name</th>
<th>Main Contents</th>
<th>Main Participants Developing or Implementing the Measures</th>
<th>Classification of Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Payment for SARS-CoV-2 nucleic acid test</td>
<td>The Large Scale SARS-CoV-2 nucleic acid test was provided in February 2020. The doctor determined the need for the test according to the standards formulated by Robert Koch Institute (RKI). The health insurance fund bore all fees.</td>
<td>BA</td>
<td>I</td>
</tr>
<tr>
<td>2</td>
<td>Provide personal protective equipment for doctors and dentists contracted with GKV</td>
<td>Personal protective equipment included protective face masks, protective suits, and protective eyewear. The health insurance fund covered all relevant fees.</td>
<td>GKV-SV, KBV, KZBV</td>
<td>IV</td>
</tr>
<tr>
<td>3</td>
<td>Issue the certificate for incapacity to work via the telephone</td>
<td>The certificate for incapacity to work (AU certificate) could be signed and issued via telephone calls if the insured’s past history of a respiratory disease was confirmed and certain conditions were met. This regulation also applied to the signing and issuing sick leave certificates for children to collect the subsidy. This certificate could be obtained only after the required physical check-up and outpatient clinic process since June 1, 2020. Then the option to issue certificates via telephone was reintroduced on July 1, 2020 in some regions.</td>
<td>GKV-SV, KBV</td>
<td>II</td>
</tr>
<tr>
<td>4</td>
<td>The long-distance video diagnosis and treatment services provided by doctors and psychotherapists</td>
<td>In order to minimize the risk of infection, the GKV-SV and KBV removed the restriction on video consultations from April 1, 2020.</td>
<td>GKV-SV, KBV</td>
<td>II, III</td>
</tr>
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<td>5</td>
<td>Rules for drug supply</td>
<td>In order to reduce infections, GKV-SV and DAV reached an agreement on the supply of drugs. For instance, it was permitted to replace prescribed pharmaceutical products with those containing the same active components. According to the Regulations for the Anti-SARS-CoV-2 Drug Supply, a temporary payment system was introduced for the delivery services of pharmacies. The validity of the prescription was extended to 14 days at most.</td>
<td>GKV-SV, DAV</td>
<td>II, IV</td>
</tr>
<tr>
<td>6</td>
<td>Suggestions for patient transportation</td>
<td>The basic principle was to ensure the safety of patients seeking medical help as well as the benefits of the providers of ambulance services. During the pandemic, a unique, separate pathway for respiratory infectious diseases patients to seek medical help was established to avoid cross-infection caused by personnel mobility. The professional isolation transport was adopted for respiratory infectious diseases patients.</td>
<td>GKV-SV, The Federal Association of Health Insurance Funds</td>
<td>II</td>
</tr>
<tr>
<td>7</td>
<td>Suggestions for home health care services</td>
<td>During the Covid-19 pandemic, home health care services (häuserliche Krankenpflege, HKP) were allowed to deviate from the contractual standards. In order to ensure the consistency of HKP services, GKV-SV and the Federal Association of Health Insurance Funds agreed on the content of HKP services during special periods.</td>
<td>GKV-SV, The Federal Association of Health Insurance Funds</td>
<td>II</td>
</tr>
<tr>
<td>8</td>
<td>Rules for hemodialysis treatment for patients with chronic renal insufficiency</td>
<td>If the treatment for chronic renal insufficiency patients was affected by respiratory infectious diseases, the health insurance fund consented to the temporary deviation of the treatment scheme from the standard treatments for these patients and the use of alternative treatment.</td>
<td>GKV-SV, KBV</td>
<td>III</td>
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<tbody>
<tr>
<td>9</td>
<td>Suggestions for palliative treatment and hospice care</td>
<td>During the Covid-19 pandemic, palliative care and hospice services were allowed to deviate from contractual standards to be provided.</td>
<td>GKV-SV, KBV</td>
<td>III, IV</td>
</tr>
<tr>
<td>10</td>
<td>Rules for the procedures of the psychiatric outpatient department</td>
<td>Alternative treatments via telephone or video were allowed to maximally ensure the treatment for mental illness patients.</td>
<td>GKV-SV</td>
<td>II, III</td>
</tr>
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<td>11</td>
<td>Agreement on the practicing of free midwives</td>
<td>Free midwives were allowed to provide perinatal guidance through videos and telephone calls. Best efforts were made to ensure that pregnant and parturient women could get nursing support and that free midwives could have a decent income during the pandemic.</td>
<td>GKV-SV, BfHD, DHV</td>
<td>II, IV</td>
</tr>
<tr>
<td>12</td>
<td>Rules for health screening (including children and adults)</td>
<td>During the Covid-19 pandemic, physical examination and prophylactic immunization were prioritized for infants and young children aged below 10 months (U2-U5). Physical examination and prophylactic immunization could be delayed as deemed appropriate for infants and young children aged 10 months to 5 years and 4 months (U6-U9). No new applications for mammograms would be accepted between 25 March and 30 April.</td>
<td>G-BA</td>
<td>II</td>
</tr>
<tr>
<td>13</td>
<td>Rules for disease prevention and health promotion</td>
<td>Deviations of the disease prevention practice from the Disease Prevention Guideline were allowed. Digital courses on disease prevention were provided, and the tailored courses were postponed.</td>
<td>GKV-SV, ZPP, Various statutory health insurance funds</td>
<td>II, V</td>
</tr>
<tr>
<td>14</td>
<td>Expropriation of rehabilitation clinics to treat emergency patients</td>
<td>To reduce the burden on the hospitals during the Covid-19 pandemic, rehabilitation clinics were included in the scope of health insurance payment to receive patients who were hospitalized via the emergency department.</td>
<td>GKV-SV, DKG</td>
<td>III</td>
</tr>
<tr>
<td>15</td>
<td>Temporary rules for increasing the flexibility and freedom of hospitals to utilise resources.</td>
<td>Some clinical treatment programs were allowed deviate from the requirements of the quality guidelines. For example, the validity of post-discharge prescriptions paid by the health insurance fund was extended from 7 days to a maximum of 14 days; hospitals were given flexibility in the use of staff, including those in the Intensive Care Units (ICUs), etc. Financial support was provided for doctors, dentists, nurses, hospitals, rehabilitation treatment facilities to compensate for the losses they suffered during the Covid-19 pandemic.</td>
<td>G-BA</td>
<td>II, III</td>
</tr>
<tr>
<td>16</td>
<td>Financial compensation for medical care practitioners and institutions providing medical care services.</td>
<td></td>
<td>GKV-SV, DKG, KBV, KZBV, etc.</td>
<td>IV</td>
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of the measures were implemented as soon as the number of infections first exceeded 6000 people/day and were gradually adjusted as the number of new infections changed.

In terms of the time sequence of implementation, the earliest measures included paying the fees of nucleic acid tests out of the health insurance fund and providing protective equipment to the medical workers. Subsequent actions focused on safeguarding the safety of patients and reducing the risk of patient-doctor communication. The sequential implementation of these measures demonstrated that the health insurance fund supported the prevention and control of the COVID-19 epidemic with material, human and financial resources based on the strategy of “early detection, early treatment and early prevention”. These efforts were essential to safeguard the continuity of health care services in Germany during the Covid-19 pandemic.

In terms of changes in the implementation of the measures, as the number of new cases changed, the strategy of the health insurance fund’s participation shifted from emergency and super-routine to normality. Most of the measures were designed with a long duration, and a few short-lived emergency measures were continued as the number of new cases changed. About 75% of the measures were still in effect at the end of July 2020, with 58% having been adjusted for the implementation duration. It indicated that as the number of new cases decreased and the COVID-19 epidemic became more manageable, measures to reduce the risk of doctor-patient contact were withdrawn earlier. Furthermore, as the epidemic prevention and control transitioned to a state of normalization, the safeguard measures for health care workers and patients were adapted and extended after the end of May 2020.

**Discussion**

As can be seen from the above categorisation, these measures for the epidemic prevention and control are rather detailed and varied, covering not only many areas of health services but also a high degree of flexibility. Most of them were designed to cut off the transmission routes as far as possible and to protect vulnerable populations, while at the same time providing the necessary medical care for the insured. On the other hand, these measures demonstrated their adaptability to real-time changes in the epidemic. What is more noteworthy is that, from the point of view of the authorities involved in the formulation and implementation of these measures, the health insurance fund is deeply engaged in the decision-making on the epidemic prevention and control strategies, with many strategies led by GKV-SV and implemented.
Achieving a Balance Between Epidemic Prevention and Control and Medical Coverage Provision

Centuries of human experience in the fight against infectious diseases have revealed a firm principle: cutting off transmission routes and protecting vulnerable populations is always key to the strategy. However, ensuring the continuity of required health care service for people in need during exceptional times is equally critical. How can a balance be struck between the two? The German experience may provide a highly informative example of a successful balance between epidemic prevention and control and the provision of health care services, thanks to the full participation of the health insurance fund. The above categorization results demonstrate that eight out of the ten groups in Category II are directly related to Category III. This indicates that the health insurance fund has not only skillfully reduced the risk of contact between patients and health care workers, but also constructed a diversified protection channel for the insured population. It shows a clear strategic feature of stratified provision of coverage services.

In responding to the need for routine treatment, the health insurance fund prioritized blocking the virus’s transmission chain. To avoid the high contagiousness of the SARS-CoV-2 virus in the medical environment, the fund implemented a series of measures for reducing the risk of patient-doctor contact. For example, the doctors were allowed to prescribe for a duration as long as 14 days;19,20 certificate for incapacity to work and sick leave certificate for children could be signed and issued under certain conditions via telephone consultations;21-25 limitations on long-distance video diagnosis were lifted;26 pharmacies were allowed to deliver medicine through express services.27

In dealing with special treatment needs, the health insurance fund, while ensuring maximum safety, focused on providing the necessary treatment coverage closely related to the condition, so as to ensure that the patient could enjoy the appropriate medical care while receiving safety protection. For example, in order to ensure that patients with chronic renal insufficiency requiring dialysis receive the necessary treatment, GKV-SV and KBV jointly issued a protocol in March 2020.28,29 The protocol allowed for treatments to temporarily deviate from standard treatment protocols and procedural requirements as long as they were medically justified and all possible alternative strategies were considered. The agreement was extended and remained in effect until September. For treatment services that were not urgent and could be performed at home, such as home health services,30,31 palliative care,32,33 and psychiatric services,34 the health insurance fund permitted health care providers to temporarily deviate from their service contracts or offer online treatment options under certain conditions. These measures were usually issued between the end of March and the beginning of April, which was significantly later than the measures for the management of chronic renal insufficiency.

In addition, the health insurance fund took a series of measures focused on ensuring the stability of the lives and work of health care providers and pharmaceutical suppliers during the special period. It ensured the continuity of medical services and the adequacy of medical supplies by reducing their risk of infection and addressing the reduction in income. For example, protective masks, gowns and other necessary protective equipment were provided to doctors contracted by the health insurance fund;35,36 and income reimbursement was provided to doctors, nurses, hospitals and rehabilitation clinics affected by the outbreak.37-39

Participating in Decision-making for Epidemic Prevention and Control

The demonstrated ability of the health insurance fund to achieve an efficient balance between control and health care coverage during an infectious disease pandemic is attributable to its extensive involvement in decision-making on epidemic prevention and control. A series of in-depth reviews of the 16 groups of measures revealed that, by relying on the GKV-SV, the health insurance fund was involved in the design and making of almost all medical responses. It became evident that by participating in decision-making, the health insurance fund had become one of the leading forces in the prevention and control of the epidemic.

The reason why the health insurance fund is able to participate in decision-making on epidemic prevention and control depends on a very important regulation of the German statutory health insurance system - the joint self-governance. The joint self-governance rule means that contents, standards, forms of provision, prices, etc. of health services are negotiated between the various groups involved in health services, such as the National Association of Statutory Health Insurance Funds (GKV-Spitzenverband, GKV-SV), the National Association of Statutory Health Insurance Doctors (Kassenärztliche Bundesvereinigung, KBV), the National Association of Statutory Health Insurance
Dentists (Kassenzahnärztliche Bundesvereinigung, KZBV), the National Association of Pharmacists (Deutscher Apothekerverband, DAV), the German Hospital Federation (Deutsche Krankenhausgesellschaft, DKG), the Association of Freelance Midwives Germany (Bund Freiberuflicher Hebammen Deutschlands, BfHD), and the German Central Prevention Test Center (Zentrale Prüfstelle Prävention, ZPP). This rule was first introduced in December 1913 by the Berlin Convention. Its original purpose was to resolve the conflicts between the health insurance fund groups and the doctors’ associations over the prices of health services by negotiation. Therefore, in the early days, joint self-governance was mostly about negotiating the purchase price of health care services, highlighting its “bargaining” role. This regulation was seriously undermined during the Second World War, until 1955 when the Federal German Act on Statutory Health Insurance Physicians (Gesetz über Kassenarztrecht, GKAR) and the Act on Statutory Health Insurance Funds and Alternative Fund Associations (Gesetz über die Verbände der gesetzlichen Krankenkassen und der Ersatzkassen) revived it, and the structure of the joint self-governance was set at both the state and federal levels, which continues to this day. Since the Federal Joint Committee (G-BA) was set up in 2003, the model of joint self-governance extended to more specialized areas. This committee, which is comprised of KBV, KZBV, DKG and GKV-SV, is the authority for setting the content and standards of health care within the framework of the law. After this, under the rules of joint self-governance, the health insurance fund formally entered the decision-making arena of health care provision. It has moved beyond merely financing health services to negotiating the standards, content, prices, and forms of service provision with a variety of health service providers through a consultative dialogue. The participation of the health insurance fund in decision-making on health services is in fact determined by the negotiation mechanism established by the self-governance model.

The current participation of the health insurance fund in decision-making on measures to prevent and control epidemics is the most typical example of their participation in health care decision-making under the rules of joint self-governance. In the event of an epidemic, the health insurance fund group and other groups of health care providers quickly initiate a joint multisectoral consultation at the federal level, based on the regulation of joint self-governance, to decide together on the main strategies for combating epidemics. This explains why the measures to combat epidemics involving all aspects of health services such as medical care, nursing care and rehabilitation treatment are announced simultaneously by the German statutory health insurance fund in the event of an epidemic. Such organizational operating regulations respond perfectly to the WHO’s strategic guidelines for mobilizing all sectors and communities in response to and in prevention cases.

**Fully Utilizing Payment Instrument to Lead the Implementation of the Epidemic Prevention and Control Efforts**

The second reason why the health insurance fund was able to strike an effective balance between control and coverage stems from its strategic use of payment instruments in leading the implementation of epidemic prevention and control measures. Through the flexible and precise mobilization of payment tools, it succeeded in ensuring the efficient allocation and application of health resources in special periods.

The benefits in kind is another very important regulation of the statutory health insurance system. Under this regulation, the final implementation of the content, standards, prices, etc. of health care services which consensus between the health insurance fund and the provider of the health care service is achieved by the fund use of payment instruments to purchase of services. Almost all health services used by insured persons are purchased by the health insurance fund and the majority of health service providers are also financed by the fund. Therefore, payment instruments are a very effective tool for ensuring the utilization of health care resources and the provision of health care services. Moreover, compared to administrative orders, a distinctive characteristic of payment instruments is their flexible use. It is possible for the health insurance fund to adjust the allocation of expenditures to different items according to the progress of the epidemic, without changing the total amount of funds. The advantage of using the payment instrument is even more obvious to the health insurance fund, which can instantly deploy resources for urgent needs.

In ensuring the use of health care resources, payment instruments were mainly utilized to guide patients towards reasonable access to health services. For instance, the fund lifted the previous restriction on online diagnosis and
expanded the scope of reimbursable prescriptions to 14 days, reduced general vaccination services. Priority was given to meeting the urgent medical needs of patients with acute, critical and serious conditions, while appropriately reducing the provision of routine treatments, such as home care, palliative care and psychotherapy. The aim was to influence the habits of sick insured in the use of medical resources by adjusting the provision of benefits in kind, and to free up limited medical resources to focus on the treatment of the epidemic.

In ensuring the provision of health care services, payment instruments were primarily used to increase health care expenditure to prevent and control the epidemic. For example, the fund covered payments for SARS-CoV-2 nucleic acid testing, provided necessary protective materials and supplies for health care workers, and included rehabilitation clinics in the payment for emergency admissions. These were all new temporary supplementary health insurance contracts and service agreements negotiated by health service decision makers, which had not been available in the previous schemes. The health insurance fund was chosen to implement these new coverage decisions instead of direct disbursement through the government because it could mobilize resources more quickly and efficiently and distribute them precisely to those in need by using established channels of disbursement.

**Actively Cooperating with the Government in Epidemic Prevention and Control by Continuously Performing Health Promotion Responsibilities**

In addition to playing a leading role in the prevention and control of the epidemic through its participation in decision-making and flexible use of payment instruments, the health insurance fund also plays a subordinate and supportive role through its health promotion functions. Since the implementation of the Act to Strengthen Health Promotion and Prevention in 2015 (Gesetz zur Stärkung der Gesundheitsförderung und der Prävention, PrävG), the health insurance fund has been providing comprehensive health promotion services for the insured, covering the full range of workplace and life. According to Social Security Code Book V (Sozialgesetzbuch Fünftes Buch, SBG V), the health insurance fund offers health promotion services to insured persons to reduce their risk of illness by providing helpful guidance on healthy living. Therefore, the health insurance fund has already established channels to provide health promotion services, such as online health education services for insured individuals, online health guidance. In the event of an epidemic emergency, the health insurance fund is able to use these existing channels to quickly and effectively disseminate information on epidemic protection and progress to the insured, thus complementing the government’s efforts to provide health education and health literacy on the epidemic.

**Lessons Learned**

Based on the above discussion, it is evident that the health insurance fund is involved in the German COVID-19 prevention and control through two approaches: leading and subordinate cooperation. (see Figure 2)

The health insurance fund has adopted a precise two-axis driving strategy in leading the prevention and control of the epidemic, in which the two axes - participation in decision-making and provision of payments - are complementary and mutually supportive. Firstly, the health insurance fund is deeply involved in health care service decision-making through the joint self-governance model to ensure a precise grasp of the dynamics of the epidemic and the demand for resources. Secondly, as a financial supporter, the fund leverages its powerful payment network to guide the use of resources and optimize health care resource allocation to ensure the feasibility and execution of the preventive and control strategy. These two axes are not only closely related but also promote each other in practice, together building a synergistic and efficient epidemic prevention and control system. The joint self-governance model provides a comprehensive negotiation platform for the health insurance fund and health care providers to engage in an in-depth dialogue on the current state of the epidemic and prevention and control strategies. The health insurance fund is not only financially responsible for implementing and executing the final prevention and control decisions but also for the precise control of health care resources through payment instruments. Owing to the principle of benefits in kind, the statutory health insurance system has established a comprehensive payment network that covers everything from the cost of medicines and treatment for each insured to the remuneration of health care providers. During the pandemic, the health insurance fund has skillfully used the payment function to make a precise allocation of health care resources in compliance with the WHO
strategy. Thus, the health insurance fund was not only one of the co-decision makers, but also led the overall implementation of the prevention and control strategy through payment instruments, ensuring the coherence and effectiveness of the measures.

Despite its central role in the prevention and control strategy, the health insurance fund has not neglected its continuing responsibility for health promotion and education. Since 2015, the network of health promotion services established by the health insurance fund has covered the work and life of the insured. The most important form of these services is the provision of different types of health education programs. Similarly, in case of sudden emergencies, the health insurance fund uses this ready-made health education network to quickly and accurately transmit the latest prevention and control information on the epidemic to its members.

Based on the existing health care services policy decision-making framework and health insurance payment and service network, the health insurance fund seamlessly integrates leadership with subordinate and supportive roles, making a significant contribution to epidemic prevention and control. Therefore, other countries with a social health insurance system can draw valuable lessons from the approach of the German statutory health insurance fund's participation in the epidemic prevention and control. Although the joint self-governance model has played a central role in decision-making on epidemic prevention and control and deserves to be learnt from others, the model may not be applicable to all countries. And indeed, despite the differences that may exist in the framework of health insurance systems between countries, the effectiveness of the payment and service networks provided by health insurance funds is unquestionable. On the one hand, the payment network of the health insurance fund can be fully utilised to flexibly deploy health care resources to meet the needs of the insured and health care service providers at various stages of the epidemic, relying on its decision-making power in payment. On the other hand, the complete service network of the health insurance fund can be fully utilized to convey accurate and effective information on the epidemic prevention and control to the insured, and to raise the awareness of the whole society about epidemic diseases through targeted health education.

**Conclusions**

While most existing studies focus on the role of the health insurance fund in the management of non-communicable diseases (NCDs), this research chooses a different perspective and focuses on their role and impact in a global public health crisis, the COVID-19 pandemic. In contrast to prior studies by Chinese researchers on the fund's capacity to pay during pandemics and European research assessing the response of health insurance funds in eight countries with
social health insurance systems, this work zeroes in on the performance of the German statutory health insurance fund in the domain of infectious disease prevention and control. As decision-makers, payers of health services, and important participants of public health services, the health insurance fund has actively, proactively and flexibly engaged in the response process. It was observed that the fund has not only participated in making epidemic-related decisions, but also has spearheaded the implementation of measures and rapidly adapted to a collaborative role in co-managing crises on multiple fronts. The fund has strategically reallocated health care resources in response to emergencies, utilizing flexible payment tools to guide insured individuals in the proper use of health care services and to support the health care delivery system to operate in a direction that is conducive to outbreak prevention and control. In addition, by making full use of the health insurance service network to provide comprehensive early warning, epidemic prevention education, and health guidance, it has played not only a role in health promotion, but has also in supporting and aligning with the government decision-making in the prevention and control of epidemics. The findings of this research suggest that the German health insurance fund’s involvement in the prevention and control of COVID-19 offers instructive lessons. Such involvement provides an example of the practice of the health insurance fund in responding to major public health crises and paves the way for a new reference model for multisectoral collaboration in the prevention and control of the epidemic.

**Data Sharing Statement**

The figures and tables used to support the findings of this research are included in the article.

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