Research Report on the Sustainable Development of City Supplementary Commercial Health Insurance in China

R&D-based Pharmaceutical Association Committee (RDPAC)

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Preface

People's health is an important indicator of a nation's prosperity and a country's strength. With economic conditions improving and an increasingly aging population, China needs to continue investing in health care to achieve its health goals. Medical security is important to alleviate the burden of medical expense, improve people's wellbeing and allow society to flourish. In the past ten years, the reform of the national medical security system has consistently advanced, making breakthroughs in tackling major problems of poor access and expensive medical costs for treatment in China's health system. The Outline of the "Healthy China 2030" Plan has set the goal of reducing the proportion of personal expenditure to China's total expenditure on health to 25% by 2030.

More advanced treatment methods have been developed and applied in the market, which has brought practical benefits to patients, as well as higher expenditures for new technologies and drugs. Meanwhile, China's basic medical security system is facing great pressure. With the establishment of the National Healthcare Security Administration ("NHSA") in 2018, measures such as regular updates to the National Reimbursement Drug List ("NRDL"), the reform of personal medical insurance accounts, and cross-provincial settlement of medical expenses have been introduced in succession, which ensures more stable growth of the medical insurance fund and more successful implementation of the basic medical security system. However, it should also be noted that many urgent needs for health are still unmet. Some innovative drugs are unavailable to patients due to their high costs, which cannot be remedied via inclusion in the NRDL in the short term. As a result, other sources of funds are badly needed.

The Outline of the "Healthy China 2030" Plan clearly proposes to improve a multi-layered medical security system, mainly supported by basic medical security, and supplemented by various forms of commercial health insurance. In June 2021, *The Medical Security Law (draft)* was issued by the NHSA, which states that "China will establish a national medical security system mainly supported by basic medical security, backed by medical assistance, and supplemented by other interconnected forms of commercial health insurance, and charitable medical assistance," thus forming a stable foundation for a multi-layered medical security system.

As a new commercial health insurance model that involves government participation, commercial operation and supplement basic medical insurance, city supplementary insurance ("CSI") has made great progress in the past few years. By 2021, about 200 CSI programs have been implemented in more than 100 cities across China, with 110 million insured and RMB 12 billion of annual premium, the fastest growth rate amongst CHI products over the past few years.

CSI programs are booming in various cities. Based on key operational indicators of economic benefits (including enrollment rate, number of the insured, payout ratio), there are some positive signs as well as many challenges for sustainable development. In terms of governance, relevant central government departments and local governments have established some policies and regulations, but CSI still needs more explicit support and guidance from the central government. In terms of medical security level, taking innovative drugs as an example, as an important security that should be covered by CSI in connection with basic medical insurance (BMI), currently the coverage of CSI is limited, and a multi-stakeholder approach is needed to improve its ability to increase patient access to such products.

Based on the analysis of about 200 CSI programs, together with views of industry experts on CSI, this report sorts out and summarizes the current situation, achievements and challenges for CSI. Drawing on examples domestic CSI and foreign CHI policies and practices, this report puts forward suggestions from three aspects to promote the long-term sustainable development of CSI, including improving patient access, enhancing economic sustainability, and strengthening governance. We hope that under the guidance of the government and the market regulation, CSI will continue to develop in a healthy and orderly manner with the joint efforts of multiple stakeholders and ultimately become an integral part of the MLSS.

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Chapter One CSI overall landscape

In 2015, Shenzhen launched the supplementary medical insurance for critical illness, a new commercial health insurance (CHI), led by the government with voluntary insurance and commercial operation. Although this product is different from the other prevailing products of City Supplementary Insurance (CSI) across China, it is considered the first CSI program in China.

Since then, CSI has been developing for 7 years. By 2021, 200 CSI programs had been implemented in more than 100 cities, with about 110 million people insured each year, and an annual premium of RMB 12Bn. CSI has reached a certain scale nationwide in the number of programs, enrollees, and premium, which has been well received by many urban citizens as an influencer.

However, CSI still faces many challenges. In terms of economic benefits, most CSIs have low enrollment rate and either too high or too low payout ratios, thus failing to achieve better economics as an insurance. In terms of governance, different national ministries and commissions relevant to CSI fail to provide clear joint guidelines, thus the role played by local governments in CSI is not clearly stated. In terms of patient access, coverage of urgently needed treatments such as innovative drugs is relatively limited. All of the above challenges cast doubt on the sustainable development of CSI.

Meanwhile, the development of CSI also shows many positive signs. In terms of economic benefits, some CSIs have witnessed high enrollment rate, a large scale of premiums, and a more reasonable payout ratio, ensuring the insurance companies to have marginal profit or no loss. In terms of governance, the CBIRC has issued relevant guiding opinions, and many local governments have issued policies and outlined the principles of CSI, including “broad coverage,” “affordable and beneficial to people”, “connection with BMI” and “commercial operation.” Regarding patient access, out-of-pocket expenses of many patients has been reduced due to the introduction of CSI programs. Most cities that have launched CSI before are now continuing to introduce the program without interruption. As a result, the continuous positive role of CSI has begun to emerge in the multilayered medical security system (MLSS).

In general, CSI is still in the initial stage of development, with most products having only 1-2 years of operation experience, which requires further exploration and observation through data accumulation, operation experience and regulatory experience, as well as joint efforts of stakeholders to promote the CSI’s sustainable development.

Section I Policies regarding CSI

(I) National policy on CHI

The construction of MLSS is one of the key tasks of China's medical system reform, and several high-level laws and policies demonstrate the government’s goal for CHI to be an important part of China's MLSS.

In February 2020, the CPC Central Committee and the State Council issued *Opinions on Deepening the*

Reform of Medical Security System, proposing to build a MLSS mainly supported by basic medical insurance, backed by medical assistance, and supplemented by commercial health insurance, charitable donation, and medical assistance by 2030. It requires to strengthen triple protection roles of BMI, critical illness insurance and medical assistance, facilitate the complementary connection of various medical insurances, accelerate the development of CHI, and coordinate charitable medical assistances to support the orderly development of mutual medical assistance and meet the multiple security needs of people. It is clarified in the policy that commercial health insurance (CHI) is an important part of multilayered medical security system (MLSS).

In June 2021, the National Healthcare Security Administration (NHSA) issued *the Medical Security Law (Draft for comment)*, proposing to build a medical security system mainly supported by basic medical insurance, backed by medical assistance, and supplemented by various forms of commercial health insurance, and charitable medical assistance, encouraging the development of CHI and supporting commercial insurance companies to expand the scope of insurance products and enrich the design of products; and encouraging employers and urban and rural collective economic organizations to purchase CHI for employees and members in accordance with regulations. NHSA also worked with relevant departments to standardize the administration of commercial health insurance and promote the orderly development of CHI, hoping to emphasize CHI as an important part of MLSS for Chinese residents from the legislative level.

In September 2021, the General Office of the State Council issued *the 14th Five-Year National Health Security Plan*, put forward to continuously improve the basic medical security system by adhering to fairness and moderation, and stable operation. It also encouraged and supported the coordinated development of CHI, charitable donations and mutual medical assistance. While encouraging and supporting the development of CHI, it also put forward requirements such as "encouraging CHI product innovation," "improving support policies, especially BMI connection" and "strengthening market supervision".

(II) CBIRC's Policy Guidance on CSI

In 2021, the CBIRC noted some problems in the development of CSI. In *the Notice on Regulating City Supplementary Insurance (CSI) Business of Insurance Companies*, and pointed out the following problems: insufficient data for the regional security scheme, lack of risk measurement, failure to take into account the basic factors such as local economic development, medical expense, BMI policy and insurance scale, and failure to fully utilize previous medical insurance data for actuarial pricing. Since CSI has wide coverage, there are strict requirements for insurers on the service capabilities of offline customer consultation, one-stop payout and claim settlement. However, some insurers have insufficient business experience and risk control capabilities, as well as highly varying levels of service and poor sustainable service capabilities.

In December 2021, the CBIRC issued *the Notice on Regulating City Supplementary Insurance (CSI) Business of Insurance Companies*, in order to encourage the insurance industry to actively participate in the construction of MLSS, maintain market order, protect consumer interests, and prevent operational risks. Specifically, the notice includes the following provisions:

- Tightening compliance with laws and regulations. Insurance companies are required to

scientifically and reasonably formulate security schemes by following the operation rules and market-based principle of commercial insurance. They shall standardize business practices and improve management service efficiency and risk control capability.

- Requiring relevant institutions to shoulder primary responsibilities. The head offices of the insurance companies are responsible for the management of engaging in the CSI business. It must review the security scheme and underwriting products, strengthen unified management, standardize business processes, and improve mechanisms for internal accountability.
- Clarifying regulatory requirements. Daily oversight shall be strengthened by local CBIRC branches to punish violations such as unhealthy competition through low pricing and false publicity, so as to maintain market order and ensure the smooth operation of business.
- Strengthening industry self-discipline. The industry association is encouraged to carry out self-discipline, actively participate in the formulation of local security schemes, establish standards for CSI service, and build an industry communication platform.

This policy effectively views the operation principles of CSI from the aspect of insurance regulation, but the Notice also failed to specify the guiding principle for local governments to participate in CSI. Meanwhile, this Notice was mainly issued to local CBIRC branches, insurance companies and the Insurance Association of China ("IAC"). However, as the development of CSI involves many departments, including medical security, finance and local government stakeholders, and the orderly development of CSI also requires explicit guidance from other relevant ministries and commissions.

(III) Local policy

Many municipal/provincial local governments have issued policies to support CSI and outlined common principles of CSI, which are detailed as follows:

Table 1 Common principles of CSI issued by local government

Principles	Details
Broad coverage	CSI covers all those insured by BMI, regardless of age, occupation, and preconditions, and offers broad benefits
Affordable and Beneficial to the people	The premium price of CSI is affordable and beneficial to the people, fully considering the payment ability of ordinary people and showing broad benefit and affordability
Connection with BMI	In terms of product design, the coverage of non-NRDL rational expenses is encouraged, including the non-NRDL expense of drugs, medical services and medical consumables at designated medical institutions, which is connected with BMI
Commercial operation	CSI providers shall scientifically and reasonably formulate security scheme by following the operation rules and market-oriented operation of commercial health insurance. They are also required to standardize business in accordance with sustainable operation and controllable risk under the guidance of marginal profit

Policies regarding CSI in many cities are mainly issued by their local HSA, but in some cities the local municipal governments and CBIRC branches also participate in guidance and jointly issuing documents, such as Chongqing. Other local government departments such as the department of finance, and department of taxation may also participate in supporting CSI, such as in Huzhou. Most local policies are focused on principles for operation while the policies of some provinces and cities also put forward specific guidance on the operation of the CSI, which effectively played supporting role in CSI.

For example, Shanghai HSA allows local residents to purchase CSI with BMI individual account funds, and put forward the principles of "one preservation", "two reforms" and "three expansions". "One preservation" means to preserve the mechanism that allows those insured through BMI to purchase CSI with the balance of individual accounts or at their own expense. The newly introduced CSI products allow Urban and Rural Resident Basic Medical Insurance (URRBMI) participants to enroll with their own expense and corporate group insurance. “Two reforms” refers to reforms to individual insurance products to group insurance products, i.e., products with increasing premiums with aging to instead provide a uniform rate, as well as the reform from purchase at any time by individuals to purchase within a fixed period (generally within 1-2 months). "Three expansions" refers to the expansion from only insuring employees to all enrollees of BMI, from covering only healthy people to including non-healthy people and from purchase for oneself only to purchase for families.

Beijing Municipal Medical Insurance Bureau issued *the Notice on Key Workplan of Medical Security in Beijing in 2021*, put forward to develop CSI products with broad benefits. CSI products should meet the needs and payment ability of the people, and insurance companies are encouraged to cover non-NRDL expenses to gradually supplement BMI to form a complete security system.

Hangzhou Municipal People’s Government released *the Implementation Plan of Hangzhou CSI*, and launched the first CSI product led and supported by the government - " XiHuYiLianBao," which put forward requirements of full coverage of the insured, high economic benefits, family protection with balance of account funds, full coverage of medical expenses, wide product coverage, and fast one-stop settlement & claims.

Chengdu HSA issued *the Guidance on Promoting the Development of CSI and MLSS*, coming up with five principles of wide coverage, strong connection, affordability, sustainability and development promotion.

Chongqing HSA issued *the Implementation opinions on promoting the development of CSI and further improving the MLSS,* coming up with principles of broad coverage, multilayered security, sustainable guidance and supervision, and standardized market-oriented operation.

Huzhou HSAand Huzhou CBIRC branch issued *the Implementation Opinions on Promoting the Development of CSI and Further Improving the MLSS*, coming up with six requirements of broad benefit in product design and project operation, inclination for critical illness, commercial operation, maximized protection of the insured, sustainable operation, and “one-stop” settlement.

Dongguan HSA issued *the Opinions on Promoting the Development of CSI*, coming up with the principles of government guidance, market orientation, voluntary enrollment, broad coverage and benefits, public welfare orientation and sustainable development.

In general, 'broad coverage', 'affordable and beneficial to the people', 'connection with BMI', and 'commercial operation' have become the common principles of CSI local policies. Nevertheless, it should

also be pointed out that guidance documents have not yet been formulated or published in many cities, which require more explicit policy support for the regulation and sustainable development of CSI.

Section II Overall Trends: positive signs and challenges

In general, the development of CSI has gone through four stages. By the end of 2021, 110 million people had enrolled in CSI programs with an annual premium scale of RMB 12Bn; CSI has been the fastest growing CHI product for the past three years. The three important operational indicators of enrollment rate, premium and actual payout ratio all display some positive signs, as well as some widespread challenges. At present, CSI is still in its infancy, having been operational for a short period. Thus, many cities need longer operation time to accumulate experience and data, and joint efforts from stakeholders will be needed to actively promote its long-term sustainable development.

The development of CSI in China can be roughly divided into four phases.

1. Pilot phase: 2015

In 2015, by introducing the Trial Measures of Shenzhen on Supplementary Medical Insurance for Critical Illness, Shenzhen launched the supplementary medical insurance for critical illness, a pilot CSI program for critical illness, to explore the establishment of MLSS and alleviate the burden of medical expenses for patients with critical illness. The enrollees reached about 3 million in that year with a premium of RMB 100Mn. This model is different from other prevailing CSIs, but it is considered the first trial of CSI.

2. Exploration phase: 2018-2019

From 2018 to 2019, CSI entered the exploration phase when most cities were waiting to learn the CSI model. Certain cities began to explore cheap and simple products. 5 cities were covered, with about 6 million enrollees and a premium of RMB 300Mn.

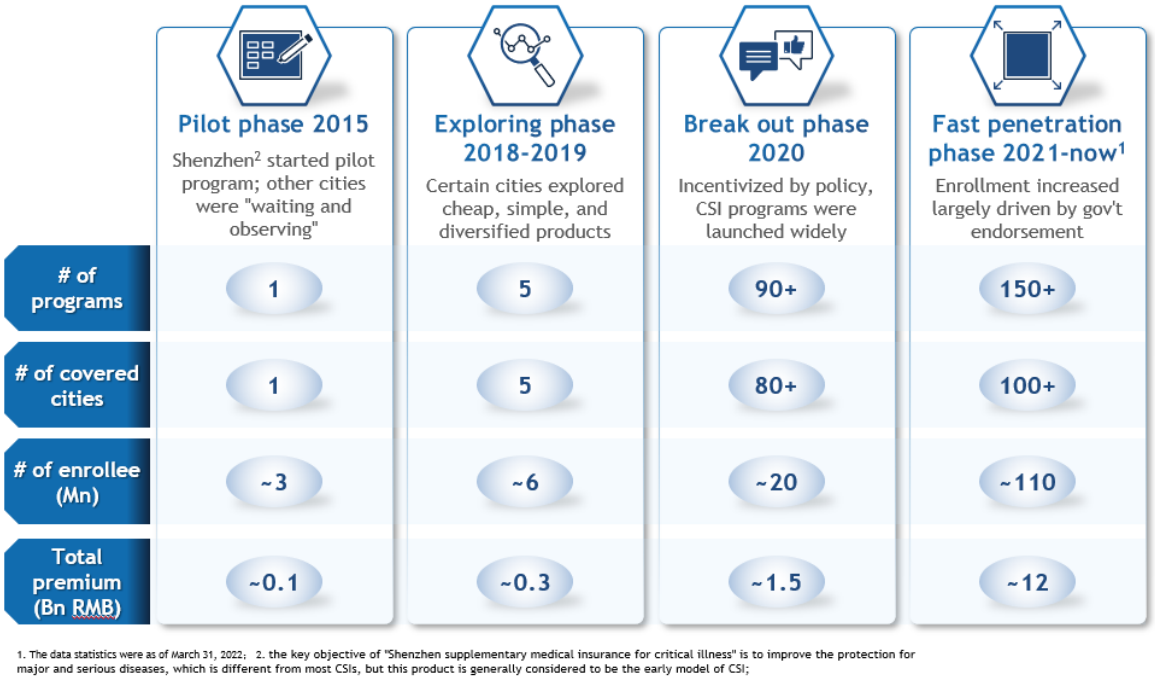
3. Breakout phase 2020

Since 2020, CSI has entered the breakout phase. In the updated NRDL, many innovative drugs were not covered, which made it more urgent to solve payment challenges for the people through other channels and drew attention to the development of CSI. By 2020, more than 80 cities were covered by CSI, with more than 90 CSI programs implemented, about 20 million enrollees and a premium of approximately RMB 1.5Bn.

4. Fast penetration phase: 2021 onwards

After several years of exploration, with vigorous promotion on the part of local governments and the participation of insurance companies, the number of enrollees increased significantly, and CSI witnessed explosive growth in 2021. In that year, more than 100 cities were covered, with more than 150 programs implemented, 110 million enrollees and an annual premium of RMB 12Bn.

Figure 1 Development roadmap of CSI



1. The data statistics were as of March 31, 2022; 2. the key objective of "Shenzhen supplementary medical insurance for critical illness" is to improve the protection for major and serious diseases, which is different from most CSIs, but this product is generally considered to be the early model of CSI;

Looking into the development of CHI, CSI still hold a small proportion, accounting for only 1% of the total premium of CHI. However, CSI has also become the CHI with the fastest premium growth in the past three years. In China, CSI is still in its infancy of development, and only some cities have the experience of continuous operation, whereas a few regions have discontinued CSI after piloting.

The operation time of most CSI programs lasts only 1-2 years. Among all 193 CSI samples, 107 programs have operated for only 1 year, accounting for 56%; and 81 programs have operated for 2 years, accounting for 41%. It is noteworthy that some regions have the experience of continuous operation of CSI, with a few programs running for a longer period. In addition to Shenzhen, Zhuhai's CSI has operated for 4 years, and other three CSI programs have operated for 3 years, namely, Guangzhou, Foshan and Suzhou. Only a few regions discontinued CSI. Only 14% in all the 118 cities discontinued CSI, 70% of which offered provincial CSI products after the discontinuation of urban CSI products.

Among the operational indicators of CSI, enrollment rate, premium, and actual payout ratio are the concerns of all stakeholders, which reflect the sustainable development of CSI as an insurance product. From these three indicators, the current development of CSI has shown some positive signs as well as certain risks.

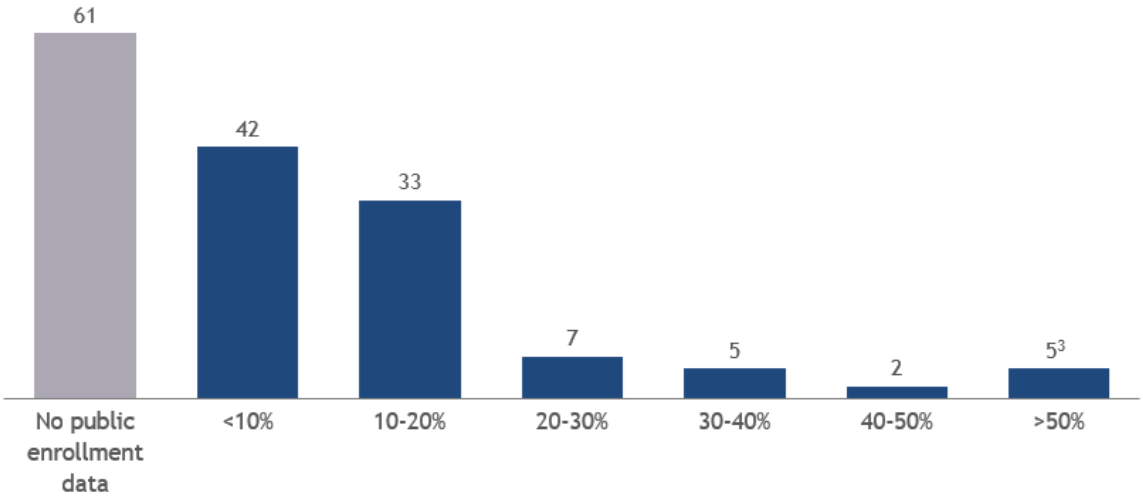
(I) Enrollment rate

The enrollment rate is the basis for the sustainable development of CSI. A reasonable enrollment rate and the number of the insured are the key factors for insurance products to distribute risks, reduce the impact of adverse selection, and improve the overall premium, as well as the key concerns of stakeholders (the enrollment rate is calculated as the ratio of the number of the CSI insured to the total population of the cities or provinces/municipalities directly under the central government to which the CSI is applicable)

After Shenzhen launched the "supplementary medical insurance for critical illness" in 2015, with strong support from the government and the drive by insurance companies, its enrollment to the CSI reached 50.9% in Shenzhen in 2019, and continued to stay above 50%. However, as the development of CSI broke out, there were great regional differences and the overall enrollment rate was also low. Yet it is praiseworthy that after the fast penetration phase, the average enrollment rate improved considerably as many cities witnessed high enrollment rates. By the end of 2021, 8% of the national population was insured, with a total of about 110 million people, and CSI became one of the largest reimbursement-based CHIs.

Currently, the distribution of the enrollment rate is polarized. Low enrollment rate is a widespread challenge: about 60% of CSIs have disclosed the data on enrollment rate, half of which involves the rate less than 10%, while 40% of CSIs have not disclosed the data on enrollment rate. According to the industry experts, those who did not disclose date are likely to have very low enrollment rates. Such a low enrollment rate will reduce the risk distribution, increase the risk of adverse selection, and hinder sustainable development. At the same time, positive signs should not be neglected that 19 cities have disclosed an enrollment rate above 20%, with some even exceeding 50%.

Figure 2 Number of CSIs by publicly reported enrollment rates[1] in 2021 (N=155 CSIs[2])



1. The enrollment rates are calculated by dividing the insured number by the total population of the city; 2. Enrollment of 94/155 products (excluding discontinued products) in 2021; 3. All 5 cities are from Zhejiang province (Lishui, Quzhou, Huzhou, Shaoxing, and Jiaxing)

From the distribution of the enrollment rate, most of the CSI programs with high enrollment rate are concentrated in the coastal areas, with some exceeding 20%, which are more likely to develop further. Most of CSI programs in the inland regions reported less than 10% enrollment rates or did not report enrollment rates.

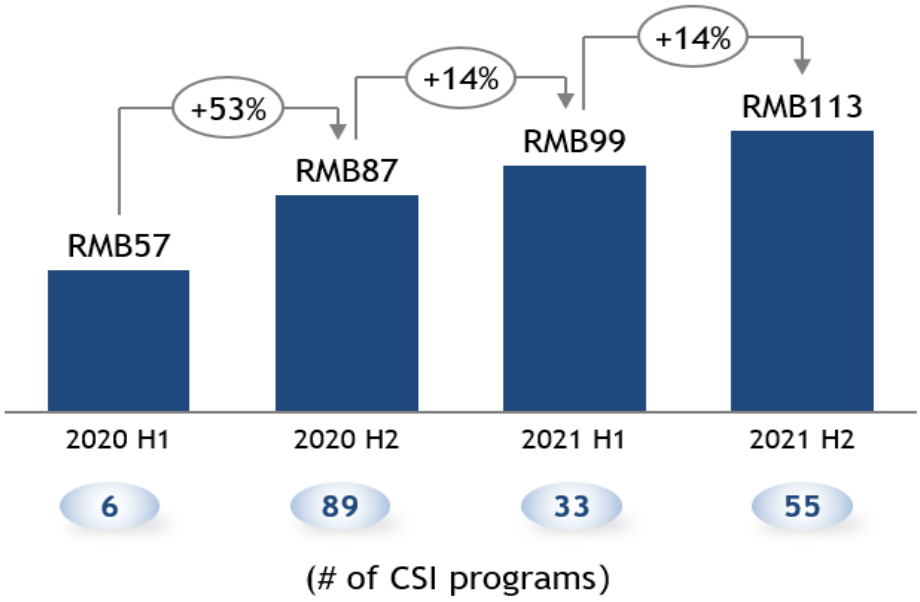
(II) Premium

CSIs boast of affordable premiums, with an average of around RMB 100. The level of premium determines the level of security, so a reasonable premium setting is also essential for CSI to play a key role in the MLSS.

Positively speaking, the premiums of CSI have increased in the past two years. The average premium of

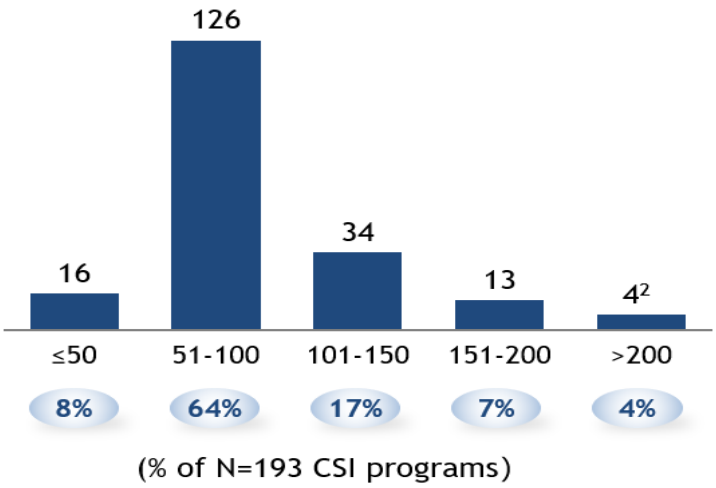
6 CSI programs launched in the first half of 2020 was RMB 57, while that of 89 CSI programs launched in the second half of 2020, 33 CSI programs in the first half of 2021, and 55 CSI programs in the second half of 2021 was RMB 87, RMB 99, and RMB 113 respectively.

Figure 3 Average annual premium by launch time (RMB/Year) (N=183)



Some CSI programs that have been operating for years are also trying to moderately increase the premium to provide better medical security. For example, the Shanghai HuHuiBao had set up a mechanism for dynamic premium adjustment at the beginning of its establishment in 2021, which allows insurance companies to moderately increase the premium in case of high payout ratio or increased security. In 2022, the premium of Shanghai HuHuiBao slightly increased from RMB 115 in 2021 to RMB 129 each enrollee. However, on the original security basis of 2021, "one supplement and two additions" were implemented which increased the number of domestic specialty drugs, and added "overseas specialty drug expenses" and "drug expenses for CART-T treatment." This adjustment was in line with the national trend of "slight price increase with upgraded security." Nevertheless, the premiums of most CSI products are still between RMB 51 and RMB 100, accounting for 64%, and the premium of only a few products exceed RMB 200.

Figure 4 CSI premium distribution[1] (RMB/Year) (N=193)



1. 193/193 products with premium are analyzed (including the stopped CSIs); 2. 深圳专属团体医疗险，南通保，南粤全民保，泰州市民保 3. 183/193 products launched in 2020 and 2021 (including the stopped CSIs);

In addition, more and more CSIs adopt tiered pricing, accounting for about one fourth of the new products launched in 2021. In the case of tiered pricing, most products are priced based on the age of the insured, that is to say, higher premiums will be charged for the elderly. Considering that it is generally difficult for the elderly to enroll in pure CHI - even if they are allowed to enroll, their premium is far higher than the current premium of CSI for the elderly - such tiered pricing based on ages still maintains its broad benefit. Meantime, CSI does not have separate pricing for people with pre-existing conditions, which also ensures its "broad coverage and affordability."

Figure 5 Proportion of different CSI premium pricing

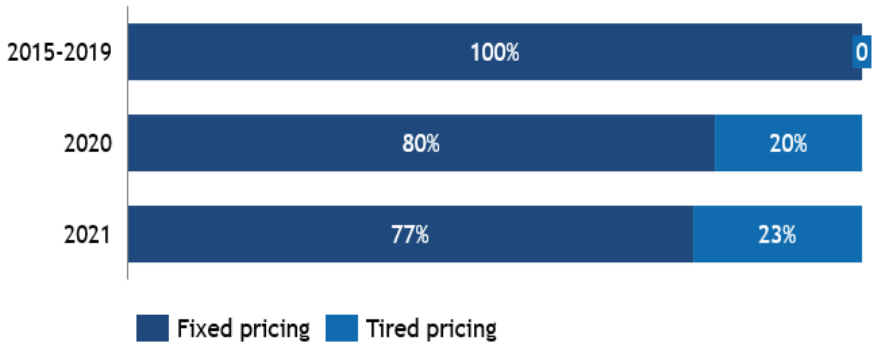
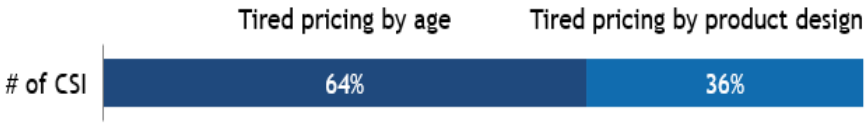


Figure 6 Proportion of CSI tiered pricing by age and product design in 2021

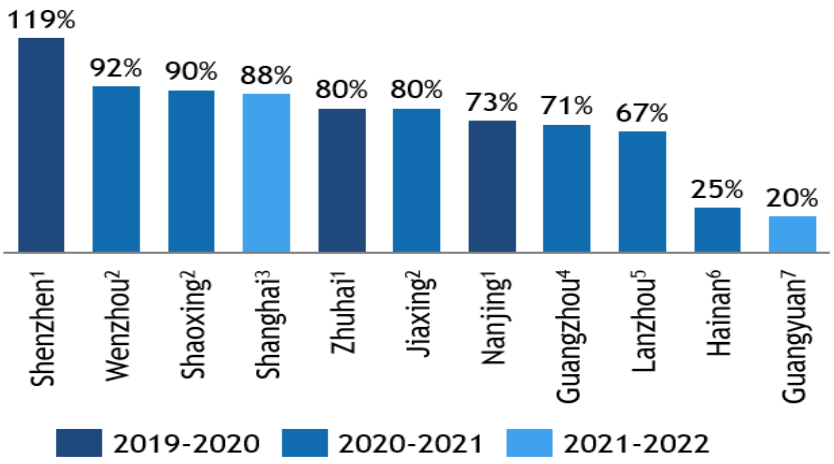


(III) Payout Ratio

Payout ratio refers to the ratio of the actual total payout amount to the total premium amount, an important indicator of whether a health insurance product really benefits the people. Payout for medical expenses is also usually the largest cost for reimbursement-based health insurance, as well as an important indicator of whether an insurance company can maintain "marginal profit or no loss". The main reimbursement-based CHI for individuals in China is Million RMB Medical Insurance, but its payout ratio is low, generally around 40%, so most of the premiums are not used to reimburse the actual medical expenses.

What is promising about CSI is that a high payout ratio (above 70%) but below 90% have been achieved in some cities, leaving a certain space for operating costs, which makes it possible to maintain "marginal profit or no loss". Taking a city as an example, it sets the minimum payout ratio to 90%, based on which the premium is set according to actuarial calculation. It also sets up a dynamic adjustment mechanism based on the actual payout ratio. If the payout is too high to cause a deficit, it allows insurers to increase premium or adjust product. If the payout is less than 90%, the balance premium shall be used as risk adjustment funds or public welfare donations to adjust product (such as proper increase in the payout ratio of non-healthy group) or premium in the later periods of CSI program.

Figure 7 Disclosed annualized payout ratio and benchmark payout ratio (%)



1. Data from "Research Report on the development model of CSI" (《"惠民保"发展模式研究报告》); 2. data from "implications of Zhejiang CSI" reported by Sina Finance; 3. payout data published by HuHuiBao WeChat official account on 25 July 2022; 4. reported by New Express on 15 April, 2022; 5. reported by Lanzhou "Jingchen Huiyibao" WeChat Official account on 21 Jan. 2022; 6. estimated based on payout data reported by Hainan "Huiqiongbao" WeChat official account on 29th Sep. 2021; 7. estimated based on payout data reported by Guangyuan "Yuanhuibao" WeChat official account on 15 Feb, 2022
Source: lit research, expert interview, BCG analysis

On the other hand, the actual payout data of CSI is not transparent. According to incomplete statistics, about 11 cities have disclosed their overall payout data. The data disclosed by some cities showed their payout ratio was even lower than the average of Million RMB Medical Insurance. According to industry experts, the actual payout ratio of most CSI products without disclosed data might be less than 50%.

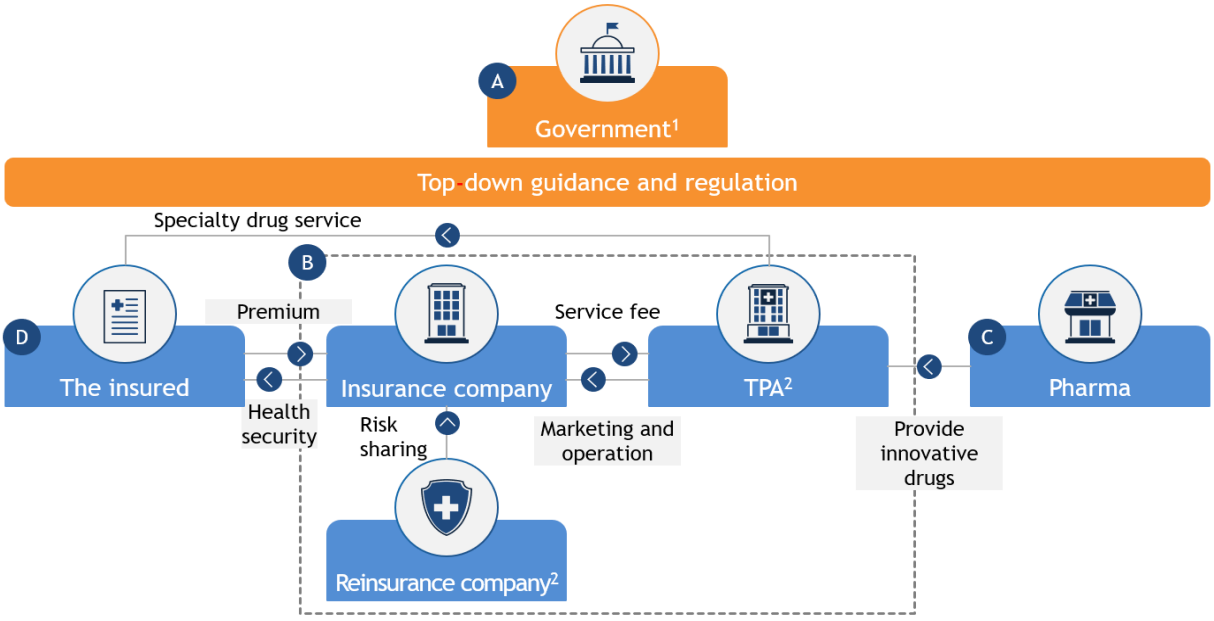
Section III Challenges of sustainable development

It can be seen that due to short operation time, how to achieve sustainable development is a major challenge to the CSI, including sustainable economic benefits, patient access and governance.

- Sustainable economic benefits: ensure "marginal profit or no loss" so that insurance companies are willing to continue to participate
- Sustainable patient access: connect with BMI to effectively reduce the out of pocket (OOP) expenses of patients
- Sustainable governance: provide clear guidance on how the government supports and participates in the development of CSI

Presently, the main stakeholders of CSI include the government, insurers (insurance companies, TPA, reinsurance companies, etc.), biopharmaceutical industry and the insured. However, at present, stakeholders have different demands on CSI, causing some challenges to the sustainable development. In the future, all stakeholders need to collaborate to pinpoint the win-win points and balance of interests to promote the sustainable development of CSI.

Figure 8 Example of stakeholders and operation models of CSI



1.different products have different levels of government participation; 2. TPA and reinsurance companies only participate in some products

The government focuses on how CSI can best "benefit the people", which is mainly shown in the following two aspects: First, conditions of enrollment, i.e., inclusion of pre-existing conditions and the elderly to achieve "broad coverage". Second, the payout ratio, that is, most of the premiums could be used for the payout of actual medical expenses, to ensure the insurance companies minimally profitable. Meanwhile, the local governments also hope that the central government can provide them with more clear guidance

about their support to and participation in CSI, thereby creating more sustainable governance.

In respect of the insurers, insurance companies, reinsurance companies, and TPAs focus mainly on the economic benefits, wishing to maintain marginal profit and controllable risks. Some insurers may be willing to bear short-term loss, expecting to enhance their influence & reputation and increase sales of their other products by involving the CSI programs. But there are no proven successful cases that participation in CSI programs can drive the sales of other insurance products on a large scale. Looking forward, only if the CSI programs guarantees "marginal profit", are various enterprises willing to participate in long term.

Pharma companies are mainly concerned about whether the CSI can improve access to innovative drugs to effectively benefit patients. Economically, pharma companies generally are supportive of having higher enrollment rates, no risk-selection and higher payout ratio. Regarding patient access, the pharma companies hope to improve the accessibility of drugs to benefit patients, with focus on the coverage of innovative drugs by the CSI programs, and OOP reduction of covered drugs, especially with high medical expenses. Pharma can actively explore cooperation with other relevant parties to jointly improve the effectiveness of patient access and the accessibility of innovative drugs.

The insured mainly pays attention to whether the enrollment conditions are not limited to health status and age, whether the price is affordable, and whether the benefits are comprehensive. Typically, the insured can judge the product guarantee level through the publicity of each product, such as the specialty drug coverage and the number of specialty drugs covered. However, the insured does not have a full understanding of the terms of product guarantee liability, such as the deductibles and reimbursement rates of different liabilities. Therefore, it is also the key to the sustainable development of CSI to standardize and simply highlight the difference between CSI and BMI and other commercial health insurance in the publicity and to enhance the participation awareness of the masses.

It is evident that there are certain differences between the needs of the above different stakeholders, which also form three major challenges for sustainable development. Solving these three challenges requires the joint cooperation of stakeholders, and is also inseparable from the government's support and supervision of CSI:

1. How to avoid the high payout risk caused by adverse selection under the condition of "No risk-selection". "No risk-selection" means that it covers the people with pre-existing conditions and the elderly, and will gradually become the "standard configuration" of CSI, which may also attract these people with high payout risk to be more willing to take out insurance. Although no CSI has been found to be terminated due to such high payout risk, in many places, a trend has emerged that high-age groups are more willing to enroll the CSI. For example, the proportion of SuiSuiKang’s insured persons over 60 years old in Guangzhou is 23%, whereas the proportion of population over 60 years old in the city is only 11%. The proportion of Yukuaibao’s insured over 60 years old in Chongqing is 30%, whereas the proportion of population aged over 60 in the city is only 22%. The average age of CSI insured in Tianjin, Shanghai, Anhui and Hainan, etc. is higher than China’s average age, and the per capita payout amount of insured persons over 65 years old is significantly higher than that of young people. Therefore, more effectively attracting young and healthy insured will be the key to the sustainable development of CSI.

2. How to sustain the continuous operation with marginal profit while ensuring that most of the premiums are used for reimbursement of medical expenses. At present, the payout ratio in some cities is higher than

80%, and due to a short operation time, the payout ratio still fluctuates to a certain extent, leaving a small leeway for operating cost and profit, and a high loss risk. The sustainability of CSI should be improved from two aspects. The first is to improve the popularity and credibility of CSI, and reduce the marketing cost of CSI through the support of the government. The second is to increase insurance companies' capability of resisting risks and controlling risks with the help of the government.

3. How to address the challenge of improving the effectiveness to patient access within the limited premium. Although the average premium of CSI has increased year by year, its fundamental attribute of "affordable premium beneficial to the people" will not change. Therefore, it is necessary to improve the connection between CSI and BMI, consider the disease characteristics of various places, and scientifically design the guarantee responsibility, so that CSI can truly become an important layer of the MLSS.

Section IV International benchmark and learnings

Looking at the major CHI markets in the world, it is difficult to find a market or insurance product that can be directly referenced by CSI. However, we can see that in the major CHI markets, the government's support and regulation have played a crucial role in the sustainable development of the CHI. Specifically, most countries take combined measures in three aspects: on the one hand, they regulate products and operations; on the other hand, they encourage the public for enrollment and continuous participation of insurance companies. A mix of approaches in three dimensions are mostly adopted to foster sustainable development of CHI market.

The first is to standardize CHI products, make mandatory requirements for products with no risk selection. Laws and regulations forbid insurance application denials; it is specified that premiums of insurance products can only be adjusted based on a few risk factors, and government guides product design principles and payout ratio, etc.

The second is to motivate consumers to enroll CHI by providing tax incentives, implementing semi-mandatory or incentivized enrollment policies. Furthermore, government promotes and encourages enterprises to have group purchase, provide support to qualified CHIs and have them scaled up, or establish government endorsed platform for promotion, to reduce the marketing costs of insurers and enhance promotion credibility.

The third is to motivate insurers for continuous provision of CHI. Support insurers to improve their operational capabilities, such as data sharing; provide risk compensation for insurers by compensating the insurers based on the risk characteristics of its enrolled people; and provide tax incentives for insurers, e.g., tax-preferential policies or subsidies for insurers that provide products with no risk selection.

The above measures have certain reference significance to the operation and development of CSI, which can help CSI develop localized strategies and practices in light of China's own conditions and its practical experience. Specific suggestions will be discussed in the last section of this report.

(I) Overview of American CHI market

The medical security system in the U.S. mainly includes five categories: employer group insurance, individual commercial insurance, Medicare, Medicaid and Military (TRICARE). Among them, Medicare mainly targets at people over 65 years old, covering about 15% of the population. Medicare is provided

by Center of Medicare and Medicaid Service ("CMS") or private organizations, among which Medicare Advantage, Part D and Medigap are operated by commercial insurance companies.

Table 2 U.S. Medicare: Medicare is a multi-layer health security system, among which Medicare Advantage, Part D and Medigap are operated by commercial insurance companies

Medicare part	Operator	Benefits	Coverage[1] (million ppl)
Part A (Hospital insurance)	Center of Medicare and Medicaid Services (gov't)	• Inpatient care in hospitals, skilled nursing facility care, hospice care, and home health care	56
Part B (Medical insurance)		• Services from doctors and other health care providers • Outpatient care • Home health care • Durable medical equipment (like wheelchairs, walkers, hospital beds, and other equipment) • Many preventive services (like screenings, shots or vaccines, and yearly "Wellness" visits)	53
Medicare Advantage (MA)	Private insurance company	• Cover Part A and Part B benefit, and additional benefit differentiated by individual plan, some includes Part D	22
Part D		• The cost of outpatient prescription drugs (including many recommended vaccines)	47
Medigap		• Helps pay your share of costs in original Medicare	14
Although MA, part D and Medigap are operated by the insurance companies, CMS is still involved to guide and regulate its operation (more details in the next page)			

1. Kaiser Family Foundation 2020

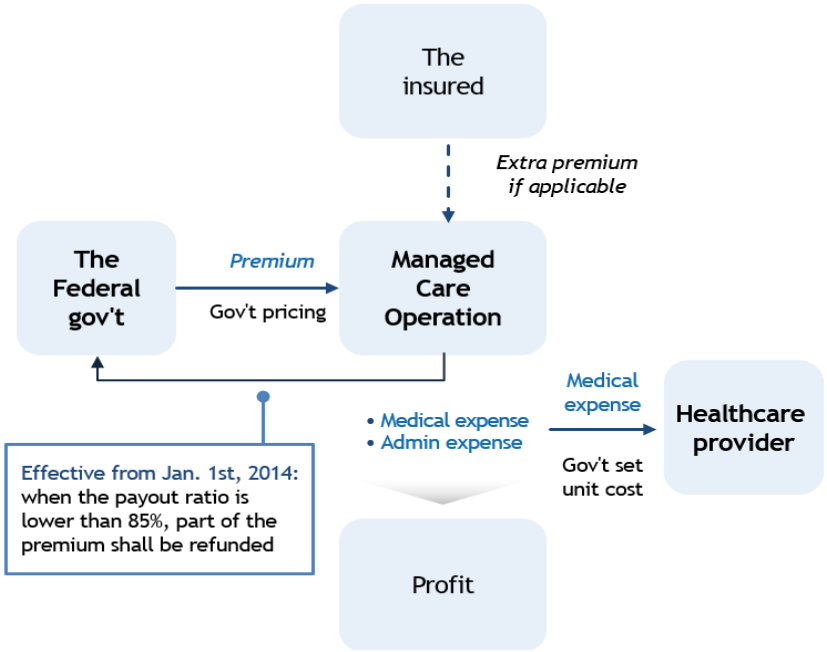
Medicare Advantage is an alternative to Medicare Part A + Part B, that is, the insured can choose not to enroll in the benefits of Medicare Part A and part B operated by the government, but to purchase the Medicare Advantage operated by commercial insurance companies. In this case, the federal government will help pay to the insurance company (MCO) from the insured's Medicare fund based on the following requirements:

- Product specification: it must include the same benefits of Part A and Part B, and insurance companies are encouraged to provide additional benefits (such as dental, ophthalmic and other services not covered by Part A and Part B). The minimum payout ratio is 85%, below which the premium shall be returned to the insured. It cannot deny insurance application for those who meet the Medicare conditions, or have differential pricing regarding pre-existing conditions

- Encouraging consumers to buy Medicare Advantage: Official government website Medicare.gov provides a portal to purchase Medicare Advantage plans, with sales of Medicare Advantage plans fully endorsed
- Motivating insurers for continuous provision of Medicare Advantage plans: Commercial insurance companies can get paid reasonable premium through the risk adjustment mechanism and bidding system: when certain Medicare Advantage plan has more sick enrollees, it can obtain higher premium paid by the government. In addition, the services of insurance companies are evaluated by the government, and those with better services are rewarded. These measures have significantly enhanced the enthusiasm of insurance companies to operate Medicare Advantage and its sustainability.

Currently, Medicare Advantage has occupied more than 30% of national Medicare service and the penetration rate in some states has reached 50%.

Figure 9 Business model of Medicare Advantage



The U.S. experience reveals that even in a market with highly commercialized operation, the patient access for the elderly cannot simply be solved in a wholly market-based approach. The Medicare Advantage (MA) where the government collaborates with CHI can provide a reference for CSI to realize "broad coverage" in China. Although MA differs from CSI in the financing model, its regulation and encouragement for the insured and commercial insurance companies are worth learning from.

(II) Overview of Australian CHI market

In Australia, MBS (Medical Benefits Schedule) and voluntary CHI go together. CHI is voluntary, mainly supplementing MBS and providing high-end service security, such as Hospital Cover (covering the OOP

expense over MBS limit, and the operation and ambulance expenses not covered by MBS) and Extras Cover (Ophthalmology, dentistry, etc.).

In order to achieve "relatively fair coverage for the whole population" by CHI (regardless of the young health groups or old vulnerable groups), the Australian government has passed legislation to ensure that CHI has a high proportion of coverage for all age groups. In 2019, the enrollment rate of CHI for people over 65 years old in Australia reached 54%, about 10 percentage points higher than the average enrollment rate of all age groups.

Australia has regulated CHI through legislation to enhance its sustainability, mainly including the following measures:

- Product specification: mandatory "community premium", that is, insurance companies charge the same premium to all people covered by the same type of policy regardless of their gender, health status, occupation or other factors and cannot deny insurance application for pre-existing conditions. Insurance companies can only determine premiums based on the health status and demographic data of different geographies or the total population covered by the specific policies they underwrite.
- Enrollment encouragement: Australia has set additional tax penalty rates for uninsured high-income group, and the higher income, the more tax penalty rates. Besides, Australia offers discounts on premium for all the insured, those with lower income and older age can receive higher discounts. Extra discounts are offered to the young, the younger the insured age, the higher the discounts.
- Motivating insurers for continuous engagement: Build a trust fund, redistribute premium income based on risk profiles and risk characteristics of the enrolled people of individual insurers

Australia's practice of "community premium" is similar to CSI's principle of "broad coverage", and its calculation of premium based on previous data is worth learning. Its differentiated incentives for people of different incomes and ages are also a useful reference for China to improve the enrollment rate of various types of people.

Table 3 Additional tax penalty rates for uninsured high-income group

The following additional tax penalty rates are applicable before June 30, 2021:				
Personal income (AUD)	≤90,000	90,001-105,000	105,001-140,000	≥140,001
Family income (AUD)	≤180,000	180,001-210,000	210,001-280,000	≥280,001
Tax penalty for all age group	0.0%	1.0%	1.25%	1.5%

Table 4 Tax subsidies for low-income and elderly policyholders who purchase CHI

The following discount rates are applicable before June 30, 2021:				
Personal income (AUD)	⩽90,000	90,001-105,000	105,001-140,000	⩾140,001
Family income (AUD)	⩽180,000	180,001-210,000	210,001-280,000	⩾280,001
Age groups/discount rate (%)	Basic tier	Tier 1	Tier 2	Tier 3
<65 yrs old	24.608	16.405	8.202	0
65-69 yrs old	28.710	20.507	12.303	0
>70 yrs old	32.812	24.608	16.405	0

Table 5 Discounts for enrollment at different ages

Age groups	Discount rate (%)	Age groups	Discount rate (%)
18-25	10	28	4
26	8	29	2
27	6	30	0

(III) Overview of German CHI market

Germany's medical system is composed of GKV (gesetzlich krankenversicherung) and PKV (private krankenversicherung), the latter of which is divided into Comprehensive Coverage and Additional Health Insurance. Citizens can purchase additional health insurance on the basis of GKV to obtain advanced supplementary security. Civil servants (non-GKV population) and groups with a certain income and above can choose to withdraw from GKV and only purchase PKV.

When dealing with the difficulties faced by high-risk population and patients, Germany encourages enrollment for healthy people, regulates insurance products, and avoids adverse selection to ensure the coverage of the above-mentioned vulnerable groups. Taking Comprehensive Coverage as an example, specific measures include:

- Product specification: Life-long renewal is guaranteed. Once the insurance company underwrites, it cannot terminate the contract, since the right to terminate the contract belongs to the policyholder. The premium can only be determined according to the age and health status at the time of insurance application, and cannot be changed with the changing health status or age after enrollment. Therefore, Comprehensive Coverage can be regarded as "long-term insurance". The insurance company will return part of the premium to the insured in the years without payout, which further encourages the young and healthy to continue enrollment.
- Enrollment encouragement: the German government has implemented the Law to Strengthen Competition among Providers of Statutory Health-Insurance Scheme, which stipulates that all

citizens must enroll in health insurance, either GKV or PKV. Individuals/employees can enjoy tax deduction for paying the premium for PKV. Employers' payment of PKV is part of the employees' income, and is regarded as operating expenses that can enjoy tax deduction.

- Encouraging continuous engagement of insurers: the overall premium can be adjusted according to the inflation in expenditure of medical care. PKV companies can make moderate adjustment every year after comparing the actual payout with the estimated expenditure. From 2009 to 2019, the average annual growth rate of PKV premiums was 2.8%. 10% of premium collected from the young is saved as Ageing Reserve, which can reduce the payout risk for PKV companies when the insured grow old.

The current CSIs in China are basically one-year programs, and a few cities have begun to explore multi-year CSI programs. Germany's practice of the "long-term insurance" to guarantee the renewal is worth learning, and its encouragement of people when still young to enroll and establishment of the Ageing Reserve is also a useful reference.

Chapter Two Effectiveness to Patient Access

CHI usually covers three benefits: NRDL copay, non-NRDL copay, and specialty drug, among which the last one often refers to the separate reimbursement for innovative drugs. Generally, CSI products set up a separate "specialty drug formulary". The drugs listed in the formulary are not restricted to use in or outside the hospital, and some have set up separate deductible, reimbursement rate or reimbursement limit.

Innovative drugs are urgently needed by many patients, so it is significant for CSI to cover them. Innovative drugs have high clinical value and social value, and are important means to reduce mortality, improve patients' quality of life, and reduce medical expenses and social losses. For example, emerging innovative therapies such as targeted therapy, tumor immunotherapy, CART-T cell therapy, provide new possibilities for prolonging patients' lives. Currently, it is difficult for BMI to cover all innovative drugs. Innovative drugs for certain diseases are basically not in the NRDL, resulting in high unmet needs. So it is necessary for the CSI to connect with the BMI to reduce the burden of patients. At the same time, CSI's coverage of innovative drugs has also effectively enhanced its popularity and awareness, exerting a positive influence on its development.

However, CSI's current coverage of innovative drugs is rather limited. According to the analysis of the "specialty drug formulary" of 138 CSI products, on average, one CSI program only covers 19 diseases and 20 drugs. Compared with the 121 major diseases defined by WHO, 121 rare diseases defined by NHC, and 270 patent drugs (about half of which are not listed in NRDL), such coverage is still rather limited. Meanwhile, for people with pre-existing conditions, the reimbursement rate of many CSIs is quite low, making it hard to reduce the OOP ratio to below 25%.

The above-mentioned phenomenon reveals that there are still many shortcomings and major challenges in coverage of CSI in China. The lack of data support, risk management mechanism and immature design mechanism of specialty drug formulary are the root cause. Therefore, joint efforts are needed to enhance patient access to innovative drugs.

Section I Importance to cover innovative drugs for CSI

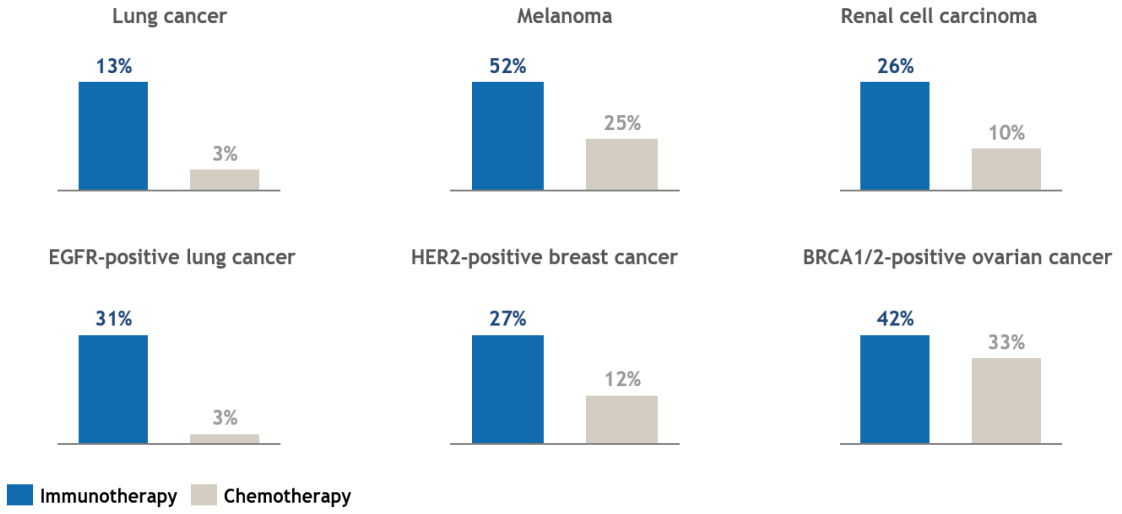
(I) Value of innovative drugs

Innovative drugs can bring multiple values to patients, the medical and health system and the society, such as extending life span, improving quality of life, preventing diseases, reducing medical expenses and promoting economic development. So, the inclusion of innovative drugs in medical insurance is of great significance and can bring significant clinical value, meet unmet needs, and raise public awareness.

Innovative drugs are essential to reduce mortality and improve patient QoL, such as significant improvement of OS for cancer patients, e.g., targeted therapy, medicines using live cell extraction, immune-oncology therapy, CAR-T cell therapy and CRISPR gene editing. In tumor field, for example, innovative therapies such as targeted drugs and immune-oncology therapy have significantly improved

the five-year survival rate compared with traditional chemotherapy. 3/4 of life expectancy gains in the United States and other high-income countries between 2000 and 2009 are due to new medicines[1]. 87%[2] reduction of AIDS death since the approval of antiretroviral treatments in 1995. New medicines have reduced heart disease deaths by 38%[3]. More than 80% of the increase in life expectancy of cancer patients since 1980 is attributable to new treatments[4]. New hepatitis C therapies approved since 2013 cured over 90% of patients – a more than two-fold increase from previously available treatment options[5].

Figure 10 5-year survival rate: specialty drugs vs. chemotherapy



Health at a Glance 2019: OECD Indicators, OECD Publishing, Paris, https://doi.org/10.1787/4dd50c09-en
Source: BCG analysis

Compared with traditional therapy, many innovative drugs are more economic. Many innovative therapies can help patients avoid surgeries, hospitalization, long-term care, and reduce medical expenses. According to the estimate of the Congressional Budget Office, for every 1% increase in the amount of prescription drugs, Medicare's (healthcare for the elderly) overall expense will reduce by 0.2%. Among the drugs listed in NRDL in 2020, there were 90 patented Western medicines with medical insurance expenditure of ~RMB 37Bn. Estimated by the American experience, the access of these innovative drugs also saved about RMB 7Bn of unnecessary expenses for the BMI fund.

The economic value of innovative drugs is also indirectly reflected outside the medical system. The popularization of innovative drugs can reduce the social costs caused by diseases: for example, some recovered patients restore the normal working capability and improve productivity. According to a study

[1] Lichtenberg, F.R., "Pharmaceutical Innovation and Longevity Growth in 30 Developing and Highincome Countries, 2000-2009," National Bureau of Economic Research, July 2012.
[2] U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics, Health, United States, 2014, Table 29, May 2015,
[3] U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, "New CDC Vital Signs: CDC finds 200,000 heart disease deaths could be prevented," Dec. 2013,; and U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, :Vital Signs: Avoidable Deaths from Heart Disease, Stroke, and Hypertensive Disease—United States, 2001-2010," Sep. 2013.
[4] Sun, E., D. Lakdawalla et al., "The determinants of recent gains in cancer survival: an analysis of the surveillance, epidemiology and end results [SEER] database," Journal of Clinical Oncology, 2008; A more recent article by the American Cancer Society (dated Jan. 8, 2019) reported that cancer death rates have been reduced 27% since 1991.
[5] See, e.g., "FDA approves Viekira Pak to treat hepatitis C," Dec. 19, 2014

on the registered patients with rheumatoid arthritis, the disease will lead to serious labor loss but the patients who receive a biological agent treatment can extend their working hours by 31 weeks per year, increasing the average income by 26,000 euros compared with those who receive traditional treatment. Take another example of a certain psychiatric disease, a study published in the American Journal of Psychiatry shows that although drug expense on related diseases in the U.S. is US $6.5Bn annually, other indirect costs saved is as high as US $8.7Bn, which exceeds the direct treatment expenses.

(II) Positioning of BMI

Since the regular adjustment of NRDL was launched, hundreds of innovative drugs have been included in NRDL. For example, during the adjustment of NRDL in 2021, 74 new drugs were added, among which, 67 exclusive drugs that were successfully negotiated had an average price reduction of 61.71%, hitting a record high. It is expected that the expense of patients will be reduced by more than RMB 30Bn in 2022.

However, there are great unmet needs of NRDL for innovative drugs. Of the 270 patent drugs approved for marketing in China, only 146 are listed in the NRDL, while as many as 124 (46%) patent drugs are not included in the list. Many diseases or patient groups are not available for drugs included in NRDL. Among them, only 57% of 82 innovative drugs for oncology, 46% of 28 innovative drugs for rare disease, and 54% of 160 patent drugs in other diseases treatment are included in NRDL.

Using the most popular PD-1/PD-L1 drug class for cancer treatment as example, many cancer types and some patient segments are not available for drugs included in NRDL.

Table 6 Approved indication before 2021/6 and status of 2021 NRDL status

Innovative Drug Brand	SCLC	NSCLC	SCCHN	GC/EC	MPM	Melaloma	CRC	NC	UC	lymphoma	LC
Opdivo		✓	✓	✓	✓						
Keytruda		✓	✓	✓		✓	✓				
Tuoyi						★		★	★		
TYVYT		★								★	★
Baize'an		★							★	★	★
AiRuiKa		★						✓		★	★
Imfinzi		✓									
Tecentriq	✓	✓									✓

✓already launched in market ★already launched in market and included in NRDL

(III) Positioning of CSI

The key positioning of CSI is a supplement to BMI to reduce high medical expenses, and cover innovative drugs not included in NRDL, which is also reflected in the CSI and CHI policies in many cities. A number of local policies have clarified the connection role of CSI for BMI. Some local policies have also

emphasized that CSI should cover the expenses that are not covered by BMI and reduce the out-of-pocket medical expenses of patients, especially the high expenses for major and serious diseases.

Table 7 Example of policies related to CSI in many cities

City	Policy	Content
Hangzhou	Implementation Plan of Hangzhou CSI	CSI is an important part of the MLSS, and plays a supplementary role to BMI...Both OOP expenses in the scope of NRDL and OOP expenses not in the scope of NRDL should be included in CSI coverage
Chengdu	Guidance on Promoting the Development of CSI and MLSS	Clearly define the key coverage of CSI to supplement BMI and reduce the operational cost of commercial insurance with the help of BMI operation model
Chongqing	Opinions on Promoting the Development of CSI and Further Improving the MLSS	CSI is an important part of the MLSS, it should be effectively linked with BMI, critical illness insurance and medical assistance...It should focus on addressing the high medical expenses borne by the insured and resolving the risk of high medical expenses for the people
Huzhou	Opinions on Promoting the Development of CSI and Further Improving the MLSS	CSI is an important part of the MLSS, and plays a supplementary role to BMI...It should reflect the preference of compensation for major and serious diseases, and play its role in reducing the medical burden
Dongguan	Opinions on Promoting the Development of CSI	CSI needs to give full play to the supplementary role of BMI, improve the accuracy of major disease insurance, and solve the needs beyond BMI

(IV) Publicity of CSI's claim settlement of innovative drugs

By exploring the patient testimonies behind CSI, it is found that CSI can reduce the OOP ratio of innovative drugs, effectively publicize CSI programs, and raise public awareness of the CSIs' benefit. The relevant reports and publicity of CSI generally reveal that the reimbursement of innovative drugs can reduce the high medical expenses and alleviate payment burden of patients.

Table 8 Cases of patients who benefit from CSI with reduced OOP cost

CSI product	City	Reported reimbursement cases
HuHuiBao	Shanghai	• Miss Chen was diagnosed with malignant tumor. One targeted drug in the treatment plan cost more than 30,000 yuan for one injection, which is not listed in NRDL. When she was worried about medical expenses, she was pleasant to find that "HuHuiBao" can reimburse 70% of the expenses. Up to now, more than 80,000 yuan has been reimbursed
WeiFang CSI	Weifang, Shandong	• Mr. Guo's son was diagnosed with spinal muscular atrophy (SMA) and needed a huge amount of money to treat this rare disease. When the parents were anxious about the money, they found the main drugs could be reimbursed as specialty drugs in the “Weifang CSI”. Up to now, more than 210K yuan have been reimbursed
ZhouHuiBao	Zhoushan, Zhejiang	• Mr. Jiang was hospitalized for X-linked hypophosphatemia and purchased the drugs listed in "ZhouHuiBao". The drugs cost more than 500K yuan and was reimbursed nearly 250K yuan upon review by "ZhouHuiBao", reducing half of personal medical expenses.
TianYiYongNingBao	Ningbo, Zhejiang	• Ms. Z was diagnosed with small lymphocytic lymphoma and later transformed into diffuse large B-cell lymphoma. Her family insured her with "TianYiYongNingBao" and learned that CAR-T therapy was included in the list of specialty drugs for malignant tumors. So they decided to use CAR-T therapy and “TianYiYongNingBao” reimbursed 40% of her expenses, about 500K yuan.
SuHuiBao	Suzhou, Jiangsu	• Mr. M was unfortunately diagnosed with lymphatic cancer in 2017. He enrolled in "SuHuiBao" for two consecutive years until 2021 with preconditions. During the enrollment, he used CAR-T therapy and spent 1.2Mn yuan, and "SuHuiBao" reimbursed 360K yuan.
PingAnFoYiBao	Foshan, Guangdong	• Mr. W was diagnosed with non-Hodgkin’s lymphoma. The specialty drug coverage of "PingAnFoYiBao" reduced the high medical expenses for him, with a reduction rate of about 57%, and a total reimbursement of 480K yuan

Section II Coverage of innovative drugs for CSI

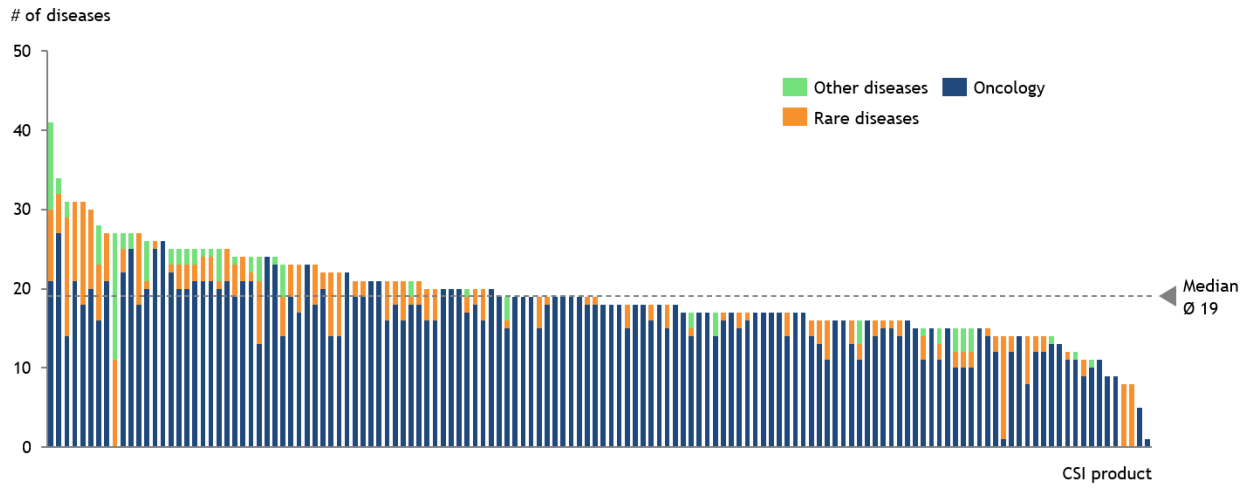
CSI's coverage of innovative drugs is usually reflected in its coverage of specialty drugs, i.e., formulating the specialty drug formulary, and setting corresponding deductible, reimbursement rate and reimbursement limit. This report sorts out 138 specialty drug formularies of CSI programs in operation in 2021, evaluating their coverage of diseases and drugs, and the actual reimbursement policies. The results show that CSI can only cover and reimburse a very limited number of innovative drugs. Most CSI programs have limited coverage of diseases and drugs, which are also concentrated in tumor and rare diseases. Meanwhile, the beneficiaries of specialty drug coverage are usually people with pre-existing conditions, but CSI have limited reimbursement rate for this group, making it difficult to significantly reduce OOP expenses for patients..

(I) Disease coverage by specialty drug formulary

Regarding overall disease coverage, the 90 out of 121 diseases that cause highest burden defined by WHO are not covered by any CSI program yet, and 103 out of 121 rare diseases in the national RD list are not covered by any CSI program.

The median number of diseases covered by a single CSI program is only 19 on average, which are mainly oncology and rare diseases.

Figure 11 Number of diseases covered by each CSI product (N=138 CSIs)



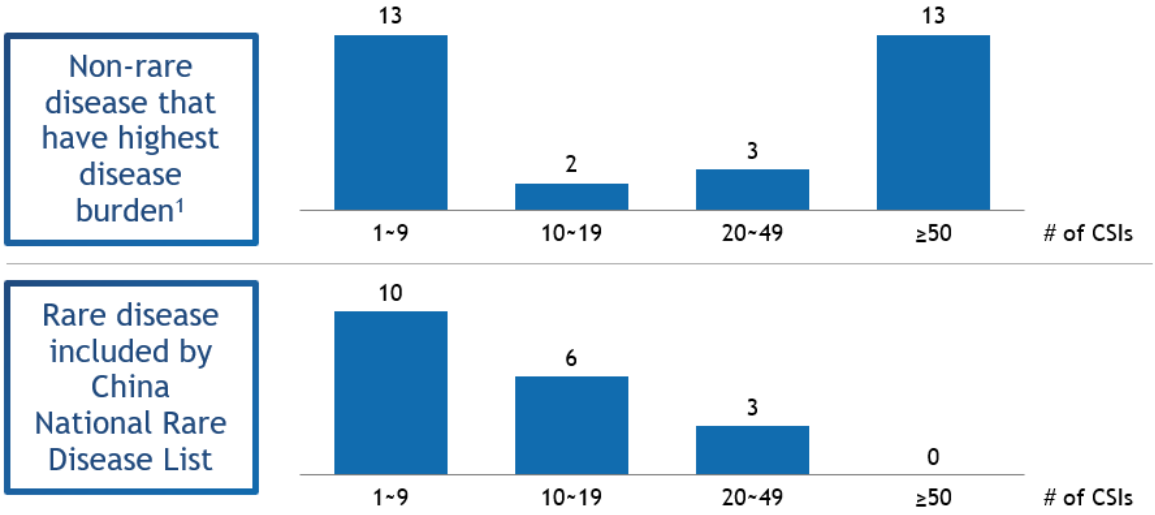
Disease coverage by CSI's specialty drug formulary is polarized. For oncology, some cancers with high incidence rate and high awareness have been widely covered (for example, lung cancer and breast cancer have been covered by more than 50 CSI's specialty drug formulary), while some cancers with high clinical unmet needs but low public awareness are only be covered by fewer than 10 CSI programs (e.g., pancreatic cancer). For rare diseases, most of such diseases are only covered by less than 10 CSI programs, presenting an obvious long-tail effect. Many chronic diseases that cause heavy social burden are basically not covered.

CSI's disease coverage is defined according to the diseases covered in its specialty drug formulary. Out of the 121 diseases that cause highest burden as defined by WHO, 31 are covered by at least one CSI program

(Appendix 1), of which 13 diseases are covered by 1-9 CSI programs, 2 diseases are covered by 10-19 CSI programs, 3 diseases are covered by 20-49 CSI programs, and only 13 diseases are covered by more than 50 CSI programs.

Only 18 out of 121 rare diseases in the national RD list are covered by CSI programs. In particular, 10 rare diseases are only covered by 1-9 CSI programs, 5 rare diseases are covered by 10-19 CSI programs, 3 rare diseases are covered by 20-49 CSI programs, and no rare diseases are covered by more than 50 CSI programs.

Figure 12 Distribution of CSI product coverage by each disease



1. Diseases that cause highest burden (DALY1) as defined by WHO, DALY (Disability-Adjusted Life Year) is a summary measure to evaluate burden of disease, which combines time lost through premature death and time lived in states of less than optimal health, loosely referred to as "disability"

Table 9 Rare diseases covered by CSI programs that are Included in China Rare Disease List

RD covered by CSI	# of CSIs
Mucopolysaccharidosis	43
Idiopathic pulmonary hypertension	36
Gaucher disease	30
Spinal muscular atrophy	19
Multiple sclerosis	16
Phenylketonuria	16
Hemophilia	13
Homozygous familial hypercholesterolemia	11
Fabry disease	10
Glycogen storage disease (type I, Type II)	10
Idiopathic pulmonary fibrosis	8
Amyotrophic lateral sclerosis	5
Hereditary angioedema	4

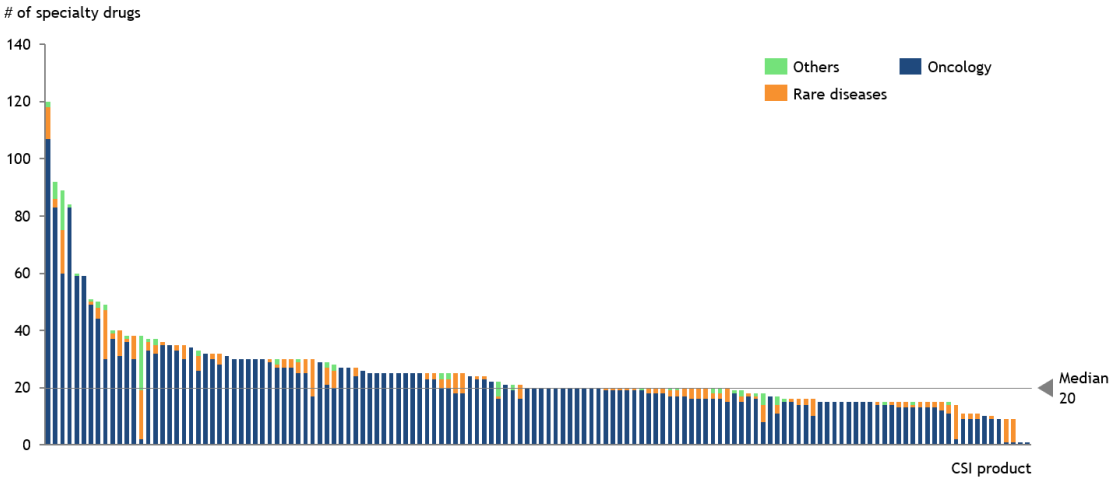
Niemann-Pick disease	3
Parkinson's disease	2
Neuromyelitis optica	2
Myasthenia gravis	2
Atypical hemolytic uremic syndrome	1
Paroxysmal Nocturnal Hemoglobinuria	1

1. 18 in 121 rare diseases specified by China government

(II) Drug coverage by specialty drug formulary

In respect of the number of drug categories covered, some CSI programs cover a large number of drugs, as many as 120 categories, but on average, the median number of drugs covered by CSI program is only 20 (the median), which may lead to inadequate medical security provided by CSI.

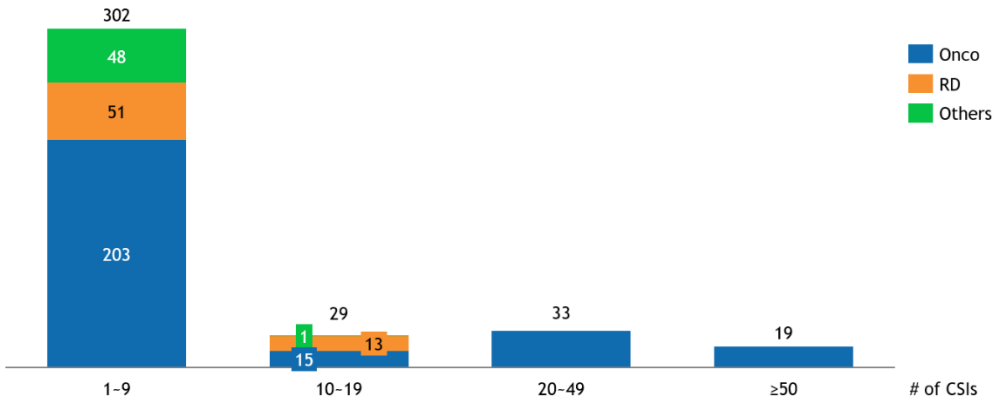
Figure 13 Distribution of CSI product coverage by each innovative drug（N=138 CSIs）



1. 138 CSIs with specialty drug formulary are analyzed;

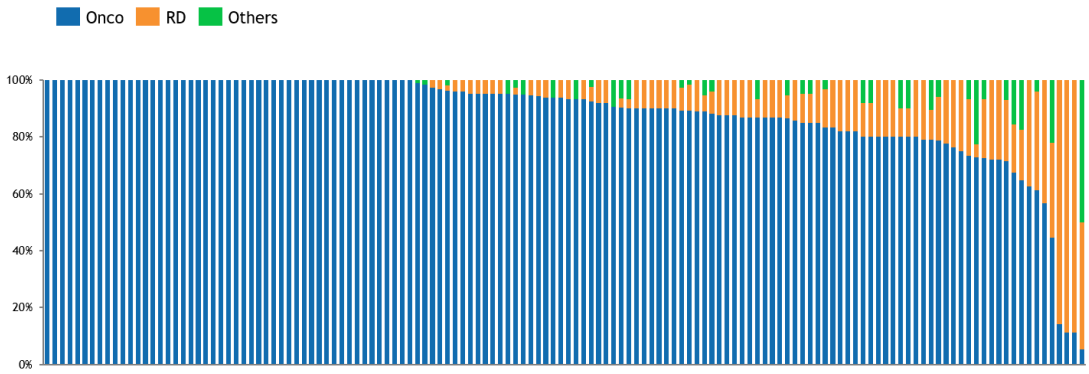
In terms of drug coverage, there is also an obvious long-tail effect. More than 80% of the drugs are only covered by fewer than 10 CSI programs. In particular, 52 drugs covered by more than 20 CSI programs are in oncology.

Figure 14 Number of specialty drugs covered by each CSI product (N=138 CSIs)



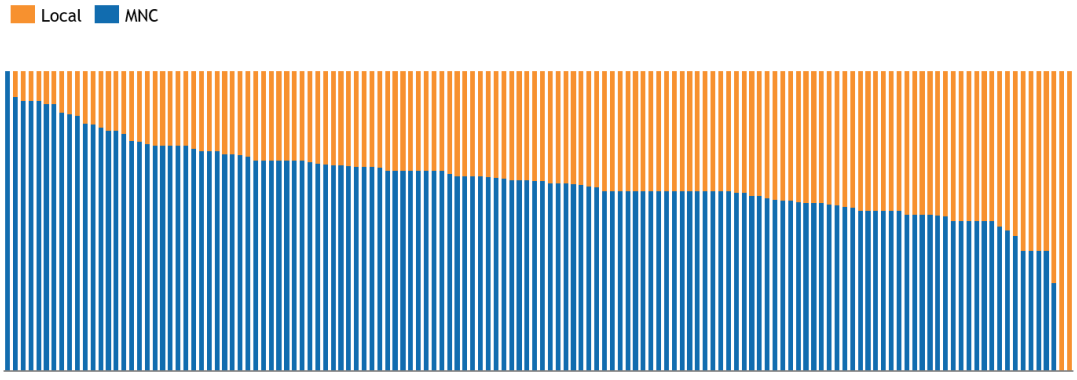
From the perspective of therapeutic areas, covered drugs are highly concentrated in oncology and rare diseases.

Figure 15 Proportion of specialty drugs in different TA covered by each CSI program (N=138 CSIs)



Regarding drug producers, the drugs covered by CSI are mainly imported drugs, with higher coverage of high-value drugs, which can relieve the payment burden of patients.

Figure 16 Proportion of specialty drugs from MNC or local company covered by each CSI program (N=138 CSIs)



(III) Reimbursement of specialty drug formulary

In terms of reimbursement level, the reimbursement rate of existing CSI programs for people with pre-existing conditions is significantly lower, which may not provide sufficient protection for these groups of people.. Although the deductible is almost the same for the groups of people with or without pre-existing conditions, most CSIs provide lower reimbursement rate for the group of people with pre-existing conditions (20-40%) against the group of people without pre-existing conditions (60-80%) For patients with high OOP costs, the reimbursement rate of 20-40% can hardly help patients reduce the OOP ratio to less than 25%. Outline of the "Healthy China 2030" Plan proposes to reduce the proportion of OOP costs to total expenditure on health to 25% by 2030.

Figure 17 Proportion of CSI programs by different deductible (N=138 CSIs)

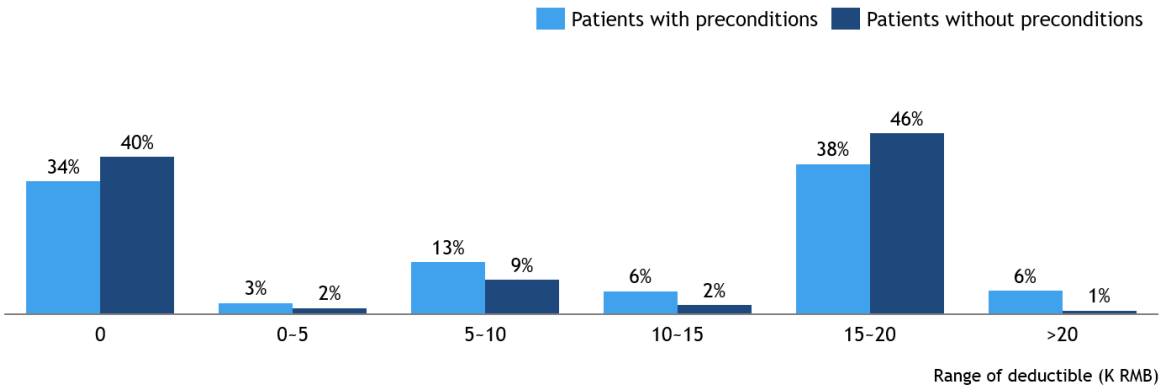
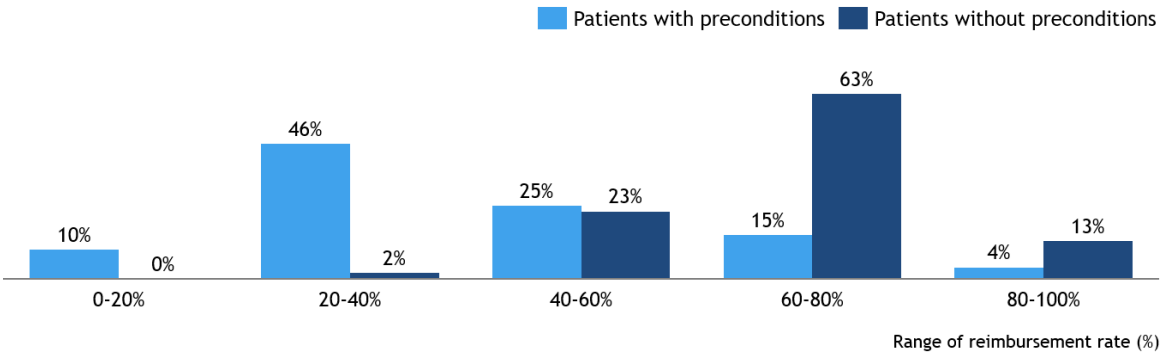


Figure 18 Proportion of CSI programs by different reimbursement rate (N=138 CSIs)



On the one hand, it is vital for CSI to continuously raise the reimbursement rate for innovative drugs, especially for people with pre-existing conditions. On the other hand, strengthening the connection between CSI and BMI and integrating other innovative payment methods with CSI to reduce the overall medical expenses of patients should also be the direction of future exploration

Currently, before some innovative drugs are included in NRDL, CSI could reduce OOP% to less than 25% only by leveraging the patient assistance program (PAP). For example, the indication of an innovative drug product is ovarian cancer and other cancers. The annual treatment cost was about RMB 912,000 pre-PAP

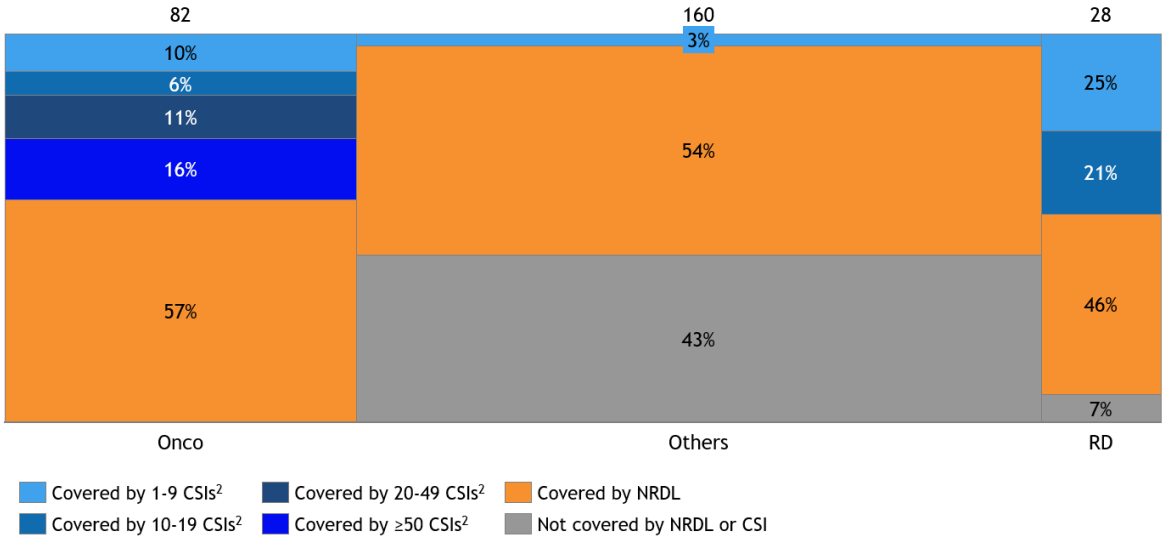
before it is included in NRDL. Excluding PAP drugs, the annual treatment cost was about RMB 300,000, CSI covered RMB 84,000, and the OOP expense was RMB 216,000, accounting for 24%. After it is included in NRDL, the annual treatment cost with the drug is about RMB 167,000, including RMB 117,000 reimbursed by NRDL and RMB 10,000 by CSI and RMB 40,000 by the patient, accounting for 25%. The combination of CSI and other payment schemes can effectively reduce the OOP burden to less than 25%.

Section III Contribution of CSI to innovative drug payment

At present, due to the limited disease coverage, drug coverage, and reimbursement rate, CSI can still make small contribution to the payment of innovative drugs, and BMI is still the fundamental medical security system. In respect of drugs, the average sales revenue of non-NRDL drugs covered by CSIs is apparently lower than that of drugs included in NRPL.

As of January 2019, about 270 major Western drugs were under patent, including 82 for oncology, 28 for rare diseases and 160 in other TAs, half of which were included in RDL. The vast majority of innovative drugs for oncology and rare diseases that are not included in NRDL are more or less covered by CSI, but 43% of other drugs are not covered in NDRL or CSI.

Figure 19 Distribution of number of drugs by TA and by NRDL and CSI coverage (N=270 drugs[1])

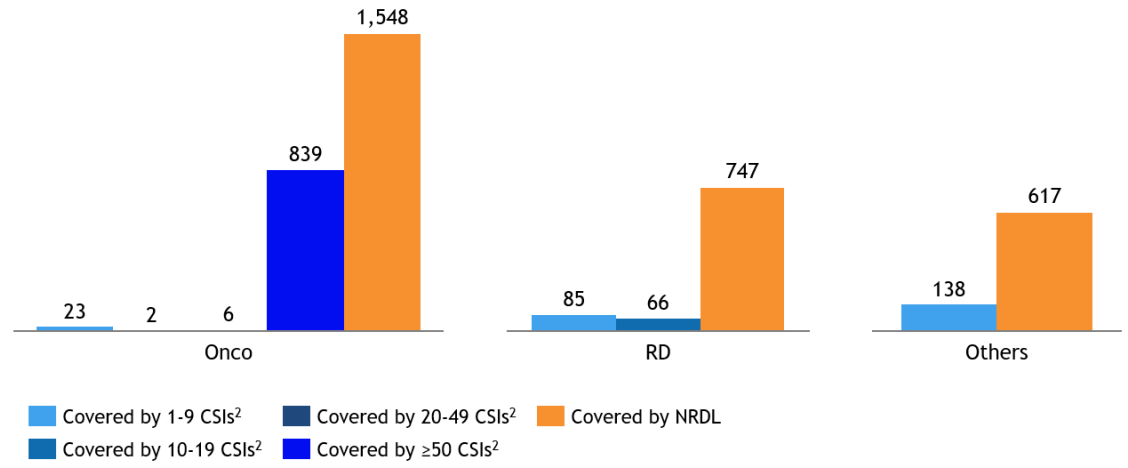


1. The drugs still under patent protection as of Jan. 2019; 2. Products which are covered by CSI alone;

In 2021, the market scale of patent drugs was about RMB 120Bn, of which the sales volume of NRDL-listed drugs accounted for about 89%, while that of drugs not NRDL-listed but covered by CSI (any CSI program) only accounted for about 9% of the total market size. In terms of the average sales amount, the annual sales of the drugs covered by CSI were much lower than drugs included in NRDL.

Figure 20 Mean average annual sales of drugs covered by NRDL, covered by different numbers of CSIs

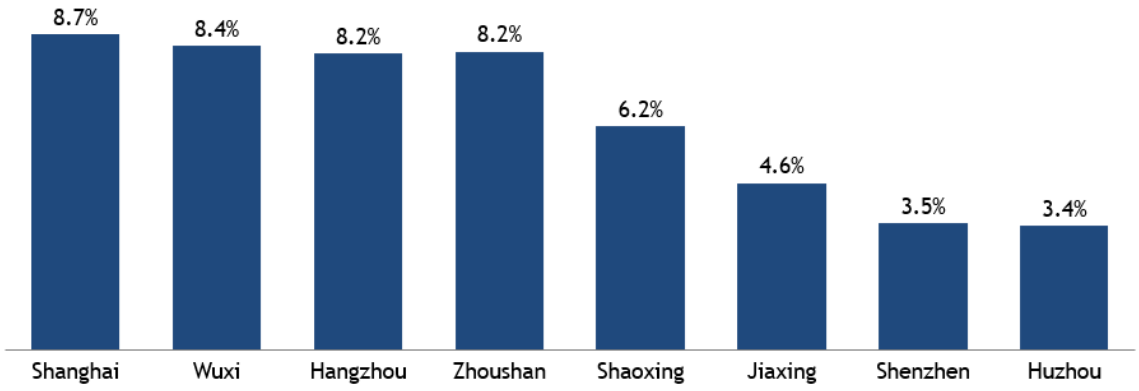
(unit: million RMB)



1. The drugs still under patent protection as of Jan. 2019; 2. Products which are covered by CSI alone; ex-manufacturing sales in 2021

In addition, the actual payout amount for specialty drugs is also a key factor to measure the contribution of CSI to the actual payment of innovative drugs. Now, the payout data of "specialty drugs" is not transparent, with only ~10 CSI programs reporting the specific payout amount for specialty drugs according to incomplete statistics. Among CSI programs in Hangzhou, Shanghai, Wuxi, Zhoushan, Shaoxing, Jiaxing, Shenzhen and Huzhou, the proportion of specialty drugs payout amount to total payout amount is relatively low, with the highest 8.7% (in Shanghai) and the lowest 3.4% (in Huzhou).

Figure 21 % of specialty drugs payout amount to total payout amount
(N=8 CSIs, Non-exhaustive examples)



Presently, there are four major challenges in CSI effectiveness of advancing patient access to innovative drugs:

The first challenge is the lack of sufficient actuarial data of innovative drugs, including lack of data, scattered data and data in a short period of time. There is lack of epidemiological data, especially for rare diseases, historical data of actual use of drugs, etc. The existing data are also scattered among different

stakeholders such as pharma companies, TPA and health insurance bureaus, failing to form mature data sharing mechanism. Meantime, no sufficient data are accumulated due to short overall operational time of CSI programs.

The second challenge is the lack of a reasonable payment model for innovative drugs. In the current cooperation, insurance companies are concerned that the payout amount is too high or the risk is uncontrollable, while pharma companies are worried that the low payout ratio cannot effectively improve the availability of drugs. Therefore, a win-win innovative payment model for both insurance companies and pharma companies is still being expected

The third challenge is the lack of clear guiding principle to design the CSI formularies. Some specialty drug formularies are not well-informed and scientific, failing to connect with NRDL and fully consider the characteristics of local diseases, or the clinical value, innovative value and pharmacoeconomic value.

The fourth challenge is the lack of understanding of specialty drugs by both the insurance companies and the third-party companies which design the healthcare insurance. Without adequate expertise, the two parties are incapable to make a comprehensive judgment on the data about drug efficacy and safety, and on the urgent clinical need of the drugs.

Chapter Three CSI case studies and experiences learned

CSI is still in its infancy, making some beneficial attempts in broader coverage of innovative drugs and more benefits for patients. As no significant impact of these attempts have been found on the sustainable development of CSI, they are worth learning by other cities. This report incorporates specific cases from different cities and puts forward some useful practices for other CSI programs' reference, to ensure CSI can better serve the MLSS.

Section I Formulating the specialty drug formulary based on the characteristics of local diseases

Now, most CSIs are locally based so the specialty drug formulary should better consider the local disease incidence and needs for key disease management. Some CSI programs have been developed based on the local disease characteristics.

Taking Guangzhou as an example, Guangdong attaches high importance to mental disease management. It published *Notice on Further Strengthening the Medical Security for Patients with Severe Mental Disorders* in 2018, which points out that patients with severe mental disorders are likely to cause public safety problems. Based on this notice, "SuiSuiKang" was launched in Guangzhou. It specifies compensation to designated schizophrenic patients for long-acting injections in Article 2 of its insurance liability (IV) about compensation for medical expenses of the specific insured. For the expenses on long-acting injections and drugs incurred in the treatment of eligible Paliperidone Palmitate Injection, "SuiSuiKang" covers 100% of the OOP cost without annual maximum payout limit. SuiSuiKang's overall payout ratio was ~79% in 2021, causing no over payout.

In Yueyang, Hunan Province, for example, the number of new cases of hepatitis B in Hunan Province ranks 3rd in China (data of 2019). Hepatitis B is one of the major disease burdens in Hunan, and the "BaLing e HuiBao" launched in Yueyang covers the innovative drugs for treating hepatitis B (Novaferon, i.e., recombinant cytokine gene-derived protein injection) (Appendix 2).

From the perspective of the above project experience, the diseases and medicines with the most local clinical needs can be covered to increase the sense of gain of the insured based on local needs. In respect of implementation, the government's authorization and sharing of local disease data and treatment data can help insurance companies and TPA better formulate specialty drug formulary according to local clinical needs. These practices are worthy learning by other CSI programs.

Section II Scientific drug formulary design

There are two keys for the scientific drug formulary design. The first is to synchronize with NRDL updates so as to truly realize the principle of "supplementary to BMI." The second is to fully consider suggestions from experts, including clinical experts, pharmacoeconomists and pharmaceutical experts.

Taking Shanghai CIS (HuHuiBao) as an example, it is synchronized with the NRDL and dynamically adjusted accordingly.

- In 2021, specialty drug formulary of HuHuiBao only cover Non-NRDL specialty drugs, well performing the supplementary role to BMI (Appendix 3).
- At the end of 2021, as 7 of HuHuiBao's specialty drugs were included in NRDL, HuHuiBao revised its policy for these 7 drugs accordingly. Given the time lag between the implementation of NRDL, the actual use of drugs and access to BMI reimbursement, some patients may not get the actual BMI reimbursement for some time after the implementation of NRDL. Therefore, HuHuiBao made adjustment of reimbursement: for the 7 specialty drugs. If the insured has received reimbursement from BMI, HuHuiBao will not accept such claims. If the patients did not receive BMI reimbursement, HuHuiBao will still reimburse according to the insurance contract (Appendix 4).
- In 2022, HuHuiBao updated its specialty drugs formulary, removing drugs that are newly included in NRDL, while adding new Non-NRDL specialty drugs and new indications of existing drugs (Appendix 5).

From the experience of the above programs, CSI can cover only non-NRDL drugs and dynamically adjust the reimbursement policy when the NRDL is updated, as well as annually revise the formulary considering new product approvals and NRDL update. This model of synchronously updating the CSI's specialty drug formulary with the NRDL can truly realize the principle of "supplementary to BMI."

Meanwhile, during the process of drug formulary design, HuHuiBao also fully considers suggestions from clinical experts and pharmaceutical experts, as well as pharmacoeconomists, who were also invited to offer pharmacoeconomic evaluation on innovative drugs. These suggestions are the basis of the drug formulary design, which is worth learning by other cities.

Section III Covering expensive treatments

With the rapid development of medical R&D and medical technology, more and more drugs and treatments that meet the urgent clinic needs are put on the market, but they are expensive such as CAR-T for oncology, and some high-value drugs for rare diseases.

CSI can cover pricey therapies like CAR-T treatment or high-value rare disease drugs to reduce the high-expense payment burden. Currently, among the 138 CSI programs analyzed, 22 have covered at least one CAR-T treatment ((Appendix 6).

Using HuHuiBao of Shanghai as an example, the specialty drug formulary covers high-value rare disease drugs such as drug with over RMB 1.4 million annual treatment cost, RMB 1 million reimbursement cap, and 0 deductible. Reimbursement rate for the healthy insured and insured with pre-existing condition is 70% and 30% respectively.

For XiHuYiLianBao CSI of Hangzhou, the specialty drug benefit covers CAR-T for lymphoma patients, with RMB 500k reimbursement cap and RMB 10k deductible. Reimbursement rate for both healthy and pre-existing condition insured is 60%.

The experience of the above programs shows that CSI's further coverage of expensive treatments (such as CAR-T treatment or high-value rare disease drugs) can greatly reduce the payment burden of patients. For example, a patient bought XiHuYilian and was reimbursed RMB 500k for CAR-T treatment. So this measure can also be a major selling point of CSI products. Insurance companies, TPAs and pharma companies can cooperate by negotiating commercial terms to enable expensive drugs (such as CAR-T treatment or high-value rare disease drugs) to be included in the drug formulary.

For CSI programs in other cities, more economically developed cities can explore covering more expensive drugs that are in urgent needs. CSI programs that currently have low payout ratio can consider covering high-value innovative drugs that are in urgent needs to have more selling points.

In addition, some CSI programs are exploring retaining coverage of specialty drugs but without specific formulary, such as "GuanJiaFu" in Dongguan. The payout risk is controlled by the deductible, reimbursement rate and maximum reimbursement amount without specifying drugs for reimbursement. The coverage contains "medical expenses for non-NRDL drugs which are not included in the negative list", so more high-value innovative drugs can be covered to enhance patient access.

Section IV Tiered premium with different drug formulary

As regards drug coverage, CSI products with different drug coverages associated with different premiums can offer more product choices.

Table 10 Plans with tiered premium and different drug formulary

	Version	Price (RMB)	Number of Specialty Drugs	Deductibles (10k RMB)	Reimbursement Ratio
GuangZhou HuiMinbao	Basic Version	49	18	2	80%
	Advanced Version	89	38	0	100%
Chongqing YuKuaiBao	Basic Version	69	0	-	-
	Advanced Version	169	42	0	80%

From the experience of the above programs, after CSI adopts tiered premiums for different drug formulary, the insured can choose the most appropriate plan according to their actual needs, which can also become a major selling point of CSI programs. In respect of this point, CSIs in other cities, regardless economical development status, can adopt to provide consumers more options (Appendix 7 &8).

Section V Covering foreign drugs not approved in China yet

In some cities, CSI also covers globally approved innovative drugs to serve urgent clinical needs, but the use of drugs is limited to some hospitals in the Boao Pilot Zone in Hainan.

According to *the Guidelines for the Declaration of Imported Drugs with Urgent Clinical Needs in Boao Lecheng International Medical Tourism Pilot Zone of Hainan Province* issued by Hainan Medical Products Administration, those qualified imported drugs with urgent clinical needs can be used in designated medical institutions in the pilot zone. Specifically, there are three conditions: 1. The drugs must have been approved for marketing in the U. S, EU, Japan and other countries or regions, but have not been registered and approved in China without substitutes from registered drugs in China, excluding vaccines and other drugs under special management. 2. Drugs must be obtained from abroad through legal channels. 3. The imported drugs can only be prescribed for specific medical purposes of the designated medical institutions in the pilot zone, and shall not flow into the market or other medical institutions. So far, more than 70 kinds of innovative drugs have been used in advance in Hainan pilot zone.

Take "Beijing PuHuiJianKangBao" CSI as an example, a total of 100 special drugs are covered in the special drug formulary, among which 75 are foreign drugs not approved in China. However, "Beijing PuHuiJianKangBao" designates Boao Evergrande International Hospital, Boao Super Hospital, Boao International Hospital, Lecheng Branch of Hainan General Hospital, Lecheng Branch of Hainan Women and Children's Medical Center as medical institutions for the treatment with foreign drugs listed in the formulary (Appendix 9). Reimbursement is only available for the use of these 75 medicines in these designated hospitals..

Taking "YanZhaoJianKangBao" CSI in Shijiazhuang as another example, 50 specialty drugs are covered in the formulary, among which 25 are foreign drugs not approved in China. "YanZhaoJianKangBao" also designates Boao Super Hospital, Boao International Hospital, Lecheng Branch of Hainan General Hospital, Lecheng Branch of Hainan Women and Children's Medical Center as medical institutions for the treatment with foreign drugs listed in the formulary (Appendix 10). Reimbursement is only available for the use of these 25 medicines in these designated hospitals..

Based on experience of the above programs, CSI’s coverage of globally approved innovative drugs will become a selling point. But without convenient access to the drugs, the actual benefit for the insured is limited. If the initiative is to be scaled up, it should also promote the establishment of more pilot areas for imported drugs that can be prescribed..

Section VI Higher reimbursement rate of specialty drugs

CSI can have higher reimbursement rate of specialty drugs to alleviate the economic burden of patients, and play the supplementary role to BMI. 21 out of 138 analyzed CSI programs are applying this practice.

Take the YueHuiBao CSI in Shaoxing as an example. As stipulated by YueHuiBao, the reimbursement rate for specialty drug is 60% for both healthy insured and insured with pre-existing conditions, with a deductible of RMB 10k and upper limit of RMB 500k. In comparison, reimbursement rate for NRDL is 50%.

For the DaBingWuYou CSI in Jiaxing, the reimbursement rate for specialty drug is 60% for both healthy insured and insured with pre-existing conditions, with a deductible of RMB 10k and an upper limit of RMB 600k, while reimbursement rate for NRDL is 40% for RMB 10k-15k and 50% for above RMB 15k. The reimbursement rate of specialty drugs is higher than that for NRDL copay.

For CSI programs in other cities, the higher reimbursement rate of specialty drugs can reduce the economic burden of the insured on high-value innovative drugs and reflect the supplementary role to BMI.

Chapter Four Summary of key recommendations

To sum up, CSI has made great achievements, and received government support and active participation of stakeholders. Yet, there are widespread challenges for CSI, including economic benefits, governance and patient access. In particular, there is still a large room to enhance innovative drugs coverage by specialty drug formulary in terms of disease coverage, drug coverage and reimbursement rate.

It is clear that many practices have improved patient access in CSI programs and international experience also demonstrates practices that are taken by governments and enterprises to promote the sustainable development of health insurance. Although not a single domestic or foreign insurance form can be used as a sample for CSI, these beneficial practices are also worth trying.

Based on the beneficial practices at home and abroad and the current development status of CSI, this report puts forward seven suggestions in three aspects, advocating that all stakeholders collaborate to promote the sustainable development of CSI. In general, they are:

Sustainable patient access: covering more innovative drugs that are urgently needed. On the one hand, pharma companies and insurance companies need to collaborate to improve data sharing and transparency, and explore innovative payment models. On the other hand, program design can learn from the beneficial practices in various cities across China to enhance access.

Sustainable economic benefits: in essence, CSI is a type of CHI, and should maintain "marginal profits or no loss" to ensure sustained participation of insurance companies. In this regard, drawing on international experience, the role of local governments is particularly crucial. They should collaborate with insurance companies to promote economic sustainability from three aspects: optimizing product design (including the benefit design, the design and requirements of premium and payout ratio, and the optimization of value-added services), collaborating to increase enrollment, and enhancing data sharing and data transparency.

Sustainable governance: all policies from the central government to the local governments should advocate clear recognition and guidance of CSI, so that various local departments can actively and orderly participate in the development of CSI. Therefore, relevant policy documents of multiple ministries and commissions are suggested to clearly support CSI and clarify the role of all stakeholders in their participation in CSI. Meanwhile, it is suggested that NHSA, as a key driver for development of MLSS, should issue relevant policy documents to support and guide the development of CSI, to promote collaboration of local HSA with other local authorities concerned to coordinate and regulate the development of CSI.

Section I Improving patient access

(I) Enhancing collaboration between Pharma and insurance industry to improve innovative drug coverage

The common demand of pharma companies, insurance enterprises, the government and the insured is to improve patient access to innovative drugs through CSI to benefit patients and enhance the attractiveness of CSI products, in order to better realize the CSI's supplementary role to BMI. The pharma companies and insurance industry should cooperate to build data infrastructure, explore innovative payment models, and design more scientific formulary.

1. Establishing an information disclosure mechanism of key operation data (such as enrollment rate, payout ratio, and drug reimbursement). A data platform should be established to share disease data, clinical demands, drug demands, drug sales, drug reimbursement that are related to special drugs, ot solve the problem of information asymmetry between the insurance industry and the pharmaceutical industry, and work together to optimize CSI.

2. Exploring innovative payment models. In developed countries, it is a common practice for pharma companies and payers to develop innovative payment methods based on the characteristics of drugs and diseases to jointly address the difficulties for patients payment. Payment methods include special pricing (such as volume discount, indication-based pricing, etc.), efficacy-based payment, payment bundled with services, and payment bundled with multiple drugs. Pharma companies can cooperate with TPA and insurance companies, especially for drugs with unclear payout risks or high-value medicines for oncology or super rare diseases, or chronic diseases.

3. Designing a more scientific special drug formulary mechanism, which is value-oriented integrating the clinical demand, pharmaceutical innovation and pharmacoeconomic values. In the process of formulary design, the evaluation and opinions of clinical experts, pharmaceutical experts and pharmacoeconomists should also be considered.

(II) Advocating for more practices and measures to improve innovative drug coverage

More CSI programs are advocated for to adopt practices and measures that can enhance innovative drug coverage.

1. It is suggested that CSI should design the specialty drug formulary according to the characteristics of local diseases and disease management needs, which can be applied to all CSI programs. The local HSA and HC can provide guidance based on local BMI and medical data.

2. It is suggested that the adjustment of special drug formulary of CSI is synchronized with the update of NRDL. After the NRDL updates, the reimbursement policy of relevant drugs shall be adjusted in time to avoid duplicate payment for the part paid by BMI. For patients who did not receive reimbursement from BMI, CSI shall still pay. The specialty drug formulary shall also be adjusted according to the update of

NRDL, covering newly approved non-NRDL drugs.

3. It is suggested that CSI cover expensive drugs that are in urgent needs, such as CAR-T treatments, and high-value rare disease drugs. More economically developed cities can explore to cover more expensive drugs that are badly needed. CSI programs currently with low payout ratio can consider improving patient access by including more innovative drugs to make the CSI products more attractive. It is also possible to explore retaining the coverage of specialty drugs without specific formulary to provide patients with more drug choices.

4. It is suggested that under the condition that the premium of the basic version of CSI remains unchanged, the economically underdeveloped regions can propose upgraded products to cover more innovative drug products and provide more choices for consumers by increasing the premium level.

5. It is suggested that CSI maintain the higher reimbursement rate of specialty drugs. More economically developed cities can explore covering higher reimbursement rate for high-value innovative drugs.

Section II Improving the economic sustainability of CSI

(III) Optimizing product design

1. Regardless whether there is government mandate or not, pre-existing conditions and the elderly shall be included with risk management considered. With the local governments paying more attention to the "broad coverage", more and more CSI programs are accessible to people with pre-existing conditions and the elderly (they can enroll, and medical expenses for treatment with pre-existing conditions can be reimbursed according to rules). CSI's attribute of "benefiting the people" should be distinguished from other CHI. Regardless whether there is government mandate or not, inclusion of people with pre-existing conditions and the elderly should be ensured.

2. The reasonable benefit and premium shall be designed to ensure benefit to the people and "minimally profitable". When designing the premium, the actuarial results and historical claim data should be considered to set a reasonable payout ratio, based on which, the premium should be designed given reasonable operating costs. Based on experience from some cities, flexible policies can be developed. For example, when the actual payout ratio is lower than the set payout ratio, the balance will be used to promote service for the insured, or increase the benefits in the next year. When the actual payout ratio is higher than the set payout ratio, insurance companies are allowed to increase the premium in future products.

3. Value-added health services and preventative care are integrated into product design to increase the sense of gain of the healthy insured and attract their enrollment. By far, this suggestion has been adopted by many CSI programs to integrate value-added services. For example, CSI in some cities like Beijing provides a number of value-added services such as chronic disease management, online consultation, and green channel for the outpatient service of critical illness. Although they are not covered by the premium, these services are easy for the insured to purchase.

(IV) Collaborating to increase enrollment

Looking at the current enrollment rate, policy support from the government, and the promotion efforts by insurance companies are the key to improving the enrollment rate of CSI. Therefore, it is suggested that multiple stakeholders collaborate in the following aspects:

1. BMI personal account is allowed to purchase CSI for individual and family members. At present, 56 cities have allowed the use of BMI personal accounts to purchase CSI. The average enrollment rate in these cities is about 23%, higher than the average. In the future, cities with the conditions, especially those with sufficient BMI fund balance, can improve their enrollment rate by allowing personal accounts to purchase CSI.

2. Multi-channel promotion with government support is encouraged to improve the enrollment rate while fully reducing the marketing cost. Now, the public awareness of insurance is still weak and they have little understanding of insurance products. Learning from international practices, the government endorsement of insurance products through public trust is an effective way to increase the enrollment rate. At the same time, local governments can leverage various channels, such as government websites, official account, related media, community management and other channels to publicize CSI, in an effort to improve the enrollment rate and reduce the marketing costs of insurance companies. Insurance companies and TPA should also fully utilize their existing channels to design simple and understandable marketing language to enhance the people's willingness of enrollment.

3. Providing incentives to encourage enrollment. By reference to international experience, government can encourage companies to collectively purchase CSI for employees as supplementary insurance through tax relief and other incentive policies. Government may also consider purchasing CSI for low-income and other vulnerable groups to effectively prevent poverty caused by illness and return to poverty due to illness.

(V) Building a sound data system

CSI has a short operation time and little data accumulation. Therefore, establishing an open, transparent and sharing mechanism based on limited data is the key to providing CSI programs with actuarial support and improving the risk control capability of insurance companies. Local governments are encouraged to cooperate with insurance companies to promote data sharing and improve data transparency.

1. Local HSA can share some data with insurance companies on the basis of data security. Local HSA are suggested to reasonably share some of the summarized BMI data when data security and the benefits of the insured are guaranteed, in order to help insurance companies optimize product actuarial pricing, including the number of insured in various categories, the statistics of medical expenses in various categories (including expenses exceeding BMI reimbursement), the number of patients with some diseases and their treatment expenses.

2. Insurance companies are suggested to publicly disclose the key operational data of CSI. The enrollment and payout data are the key indicators to measure whether CSI is truly "beneficial to the people", which has drawn wide attention from the society. Some CSI programs have made detailed and regular disclosure of the operational data (including the number of insured, the age structure of the insured, the pre-existing conditions of the insured, the number of claims, claim expenses, the distribution of claim expenses, and

claims for different coverages), to effectively enable multiple stakeholders to fully understand the operation of CSI, and improve their continuous engagement. The insurance industry is suggested to reach a consensus to promote data disclosure, and the local government can also urge insurance companies to regularly disclose key operational data to the public.

Section III Enhancing governance of CSI

From the governance at the central government level, Notice on Regulating City Supplementary Insurance (CSI) Business of Insurance Companies issued by the CBIRC can be regarded as the first step for the central government to support and regulate CSI, which still needs support from more comprehensive and extensive policy documents.

(VI) Issuing documents of the central government to support and regulate CSI

From the central government level, top-level policy documents guide the development of MLSS in China, including Opinions on Deepening the Reform of Medical Security System issued by the CPC Central Committee and the State Council, 14th Five-Year National Health Security Plan issued by the General Office of the State Council, and Medical Security Law (Draft for comments). Meanwhile, Key Task Plan for the Deepening of the National Health System Reform issued by the General Office of the State Council (e.g., Key Task Plan 2022 for the Deepening of the National Health System Reform), provides clear guidance for each task of health reform in that year. Presently, these guidance opinions have not offered clear guidance on CSI or recognized it as a key task in national health reform.

The development of CSI involves many ministries and commissions, including the NHSA, the Ministry of Finance, NHC, SAT, and CBIRC. Therefore, high-level policy documents are suggested to support the exploration and development of CSI, recognize CSI's supplementary role to BMI, and encourage local governments to support the development of CSI, and define the roles and responsibilities of all stakeholders.

(VII) NHSA to recognize CSI and provide high-level guidance

HSA plays a key role in the development of CSI. *The Key Task Plan 2022 for the Deepening of the National Health System Reform* proposes that NHSA should take the lead in "promoting the development of MLSS, including supporting commercial insurance institutions to develop CHI products connected with BMI, better covering the expenses not paid by the BMI, and promoting information sharing between the BMI information platform and the CHI information platform". Currently, most CSIs are supported by local HSA, but without guidance from NHSA on principles how local HSA can participate. Therefore, NHSA is suggested to provide policy guidance on the following aspects:

1. Specifying local HSA should participate in the healthy and sustainable development of CSI in three directions. Firstly, local HSA should guide and regulate CSI programs, ensuring its connection with BMI and effectively alleviating burden for people. Secondly, local HSA should collaborate with other local government departments (including CBIRC branches, department of finance, HC, and other administrative departments) to jointly guide and regulate CSI. Thirdly, HSA should ensure the commercial operation of CSI, following the market rules and maintaining "marginal profit or no loss".

2. Guiding the product design. People with pre-existing conditions and the elderly are included. Design of specialty drug formulary should consider local demands, clinical, pharmaceutical, pharmacoeconomic values. The formulary should be updated in synch with the NRDL, and is encouraged to cover non-NRDL innovative drugs.

3. Enhancing convenience of claim settlement. The connection between BMI settlement and the CSI claim system should be strengthened to ensure that the CSI offers compensation after payout by BMI to reduce duplicate payout. More convenient claim measures shall be developed, including "one-stop claim settlement" and direct settlement of trans-provincial medical expenses. Efforts should be made to solve the "last mile" difficulty of patient access, and enhance the convenience of drug purchase in pharmacies and reimbursement, to ensure patient access to drugs.

4. Support for marketing and purchase of CSI. Personal BMI accounts are allowed to purchase CSI for individual and family members. Support for CSI is encouraged.

5. Improving government support and supervision during the whole life cycle of CSI. In the stage of product design and development, data sharing is encouraged that part of BMI data can be shared with insurance companies on the basis of data security, which can help insurance companies enhance product actuarial and risk control. Insurance companies are also urged to regularly disclose key operational data during operation. After the termination of coverage, insurance companies are urged to analyze and review the overall operation of the products in the previous cycle to strengthen the supervision of claim data.

Future Outlook

CSI is still in its infancy, and the win-win cooperation of all stakeholders is crucial in promoting its development. Looking forward, if CSI can achieve healthy and sustainable development, it can reach the level of those well-developed CSI programs in terms of enrollment rate, premium and payout ratio.

In terms of enrollment, if CSI receives more clear support and recognition from governments at all levels, strong supportive measures and active publicity by insurance companies, CSI can be rolled out widely across China. Judging from the cities with good enrollment of CSI, if the overall enrollment rate reaches 30-40%, it can serve 500 million insured.

As regards premium, the per capita premium of CSI should be lower than that of "Million RMB Medical Insurance" and other personal medical insurance products for corresponding age groups in order to show its affordability and benefits to the people. However, the current per capita premium of CSI and corresponding premium of "Million RMB Medical Insurance" still have much room for growth. If the per capita premium increases to RMB 200-250, the total premium can reach RMB 100-120 Bn.

In respect of payout, with wide attention from all stakeholders to the economic sustainability of CSI and more partnership formed, as well as accumulation of operational data for a longer time, the payout ratio of CSI will gradually become more reasonable, which will not only show its benefits to the people as most premium is for reimbursement, but ensure the insurance companies to keep sustainable operation with "marginal profits". If an average payout ratio of 80% is realized, the overall expenditure contribution of CSI will approach RMB 100Bn, similar to the current scale of critical illness insurance, and become an important part of the MLSS.

Appendix 1：Disease list of WHO burden of disease and their DALY%

	Disease	DALY%	# of CSI
1	Stroke	13.1%	
2	Ischaemic heart disease	9.9%	
3	Chronic obstructive pulmonary disease	5.6%	
4	Trachea, bronchus, lung cancers	5.0%	133
5	Other hearing loss	3.0%	
6	Stomach cancer	2.9%	116
7	Diabetes mellitus	2.9%	5
8	Back and neck pain	2.8%	
9	Depressive disorders	2.2%	
10	Other musculoskeletal disorders	2.0%	
11	Uncorrected refractive errors	1.9%	
12	Alzheimer disease and other dementias	1.9%	
13	Colon and rectum cancers	1.9%	123
14	Kidney diseases	1.7%	18
15	Oesophagus cancer	1.7%	130
16	Liver cancer	1.6%	131
17	Hypertensive heart disease	1.6%	
18	Anxiety disorders	1.4%	
19	Migraine	1.4%	
20	Osteoarthritis	1.4%	
21	Other endocrine, blood and immune disorders	1.3%	
22	Cirrhosis of the liver	1.3%	2
23	Lower respiratory infections	1.3%	
24	Gynecological diseases	1.2%	
25	Skin diseases	1.2%	
26	Schizophrenia	1.1%	2
27	Alcohol use disorders	1.0%	
28	Drug use disorders	0.9%	
29	Preterm birth complications	0.9%	
30	Other circulatory diseases	0.9%	
31	Breast cancer	0.9%	132
32	Pancreas cancer	0.8%	22
33	Leukaemia	0.7%	123
34	Other sense organ disorders	0.7%	
35	Congenital heart anomalies	0.6%	
36	Other malignant neoplasms	0.6%	
37	Other vision loss	0.6%	
38	Brain and nervous system cancers	0.6%	
39	Other mental and behavioural disorders	0.6%	
40	Neonatal sepsis and infections	0.5%	
41	Birth asphyxia and birth trauma	0.5%	
42	Lymphomas, multiple myeloma	0.5%	134
43	Rheumatic heart disease	0.5%	
44	Edentulism	0.5%	
45	Infertility	0.5%	
46	Diarrhoeal diseases	0.5%	
47	Mouth and oropharynx cancers	0.5%	
48	Cervix uteri cancer	0.5%	28
49	Gallbladder and biliary diseases	0.5%	
50	Other congenital anomalies	0.5%	
51	Parkinson disease	0.4%	2
52	Asthma	0.4%	
53	Epilepsy	0.4%	

54	HIV/AIDS	0.4%	3
55	Tuberculosis	0.4%	1
56	Periodontal disease	0.4%	
57	Other digestive diseases	0.4%	
58	Cataracts	0.4%	
59	Iron-deficiency anaemia	0.4%	1
60	Other respiratory diseases	0.3%	
61	Parasitic and vector diseases	0.3%	
62	Prostate cancer	0.3%	101
63	Upper respiratory infections	0.3%	
64	Other oral disorders	0.3%	
65	Ovary cancer	0.3%	108
66	Childhood behavioural disorders	0.2%	
67	Peptic ulcer disease	0.2%	
68	Cardiomyopathy, myocarditis, endocarditis	0.2%	
69	Gastritis and duodenitis	0.2%	
70	Bladder cancer	0.2%	9
71	Protein-energy malnutrition	0.2%	
72	Autism and Asperger syndrome	0.2%	
73	Intestinal nematode infections	0.2%	
74	Gallbladder and biliary tract cancer	0.2%	
75	Rheumatoid arthritis	0.2%	9
76	Non-migraine headache	0.2%	
77	Other neonatal conditions	0.2%	
78	Bipolar disorder	0.2%	
79	Kidney cancer	0.2%	18
80	Other neurological conditions	0.2%	
81	Thalassaemias	0.2%	1
82	Gout	0.1%	
83	Larynx cancer	0.1%	
84	Idiopathic intellectual disability	0.1%	
85	Melanoma and other skin cancers	0.1%	120
86	STDs excluding HIV	0.1%	
87	Paralytic ileus and intestinal obstruction	0.1%	
88	Benign prostatic hyperplasia	0.1%	
89	Corpus uteri cancer	0.1%	
90	Macular degeneration	0.1%	3
91	Dental caries	0.1%	
92	Otitis media	0.1%	
93	Eating disorders	0.1%	
94	Other nutritional deficiencies	0.1%	
95	Pancreatitis	0.1%	
96	Meningitis	0.1%	
97	Iodine deficiency	0.1%	
98	Other infectious diseases	0.1%	
99	Maternal conditions	0.1%	
100	Encephalitis	0.1%	
101	Other haemoglobinopathies and haemolytic anaemias	0.1%	
102	Other urinary diseases	0.1%	
103	Inflammatory bowel disease	0.1%	
104	Neural tube defects	0.1%	
105	Hepatitis	0.1%	3
106	Thyroid cancer	0.1%	94
107	Other neoplasms	0.1%	
108	Glaucoma	0.1%	

109	Down syndrome	0.0%	
110	Childhood-cluster diseases	0.0%	
111	Other chromosomal anomalies	0.0%	
112	Urolithiasis	0.0%	
113	Sudden infant death syndrome	0.0%	
114	Mesothelioma	0.0%	108
115	Multiple sclerosis	0.0%	16
116	Cleft lip and cleft palate	0.0%	
117	Appendicitis	0.0%	
118	Testicular cancer	0.0%	8
119	Vitamin A deficiency	0.0%	
120	Sickle cell disorders and trait	0.0%	
121	Leprosy	0.0%	

Appendix 2：BaLing e HuiBao CSI Specialty Drug Formulary 2021

	Trade Name	Generic Name
1	Aiduo	Mecapegfilgrastim Injection
2	Eylea	Aflibercept Intravitreous Injection
3	Airuini	Pyrotinib Maleate Tablets
4	Aisente	ZYTIGA (Abiraterone acetate)
5	Aitan	Apatinib Mesylate Tablets
6	Aiyang	Pegaspargase Injection
7	Erbitux	Cetuximab Solution for Infusion
8	Epidaza	Chidamide
9	Elunate	Fruquintinib Capsules
10	Adempas	Riociguat Tablets
11	Alecensa	Alectinib Hydrochloride Capsules
12	Avastin	Bevacizumab Injection
13	Opsumit	Macitentan Tablets
14	Aubagio	Teriflunomide Tablets
15	Stivarga	Regorafenib Tablets
16	Epclusa	Sofosbuvir and velpatasvir tablets
17	Senyijiaonang	Senyijiaonang
18	Daboshu	Sintilimab Injection
19	Tasigna	Nilotinib
20	Nexavar	Sorafenib Tosylate Tablets
21	Endostar	Recombinant Human Endostatin Injection
22	Enruige	Ixazomib Citrate Capsules
23	Feinituo	Bortezomib for Injection
24	Fukewei	Deferasirox Dispersible Tablets
25	Afinitor	Everolimus
26	Fukewei	Anlotinib Hydrochloride Capsules
27	Fosrenol	Lanthanum Carbonate Chewable Tablets
28	Fufanghuangdaipian	Fufanghuangdaipian
29	Genike	Imatinib Mesylate Capsules

30	Hanlikang	Rituximab Injection
31	Herceptin	Trastuzumab Injection
32	Huayitan	Ambrisentan Tablets
33	Huixin	Azacitidine for Injection
34	GIOTRIF	Afatinib Dimaleate Tablets
35	Jizhi	Gefitinib Tablets
36	Jakavi	Ruxolitinib Phosphate Tablets
37	Kaimeina	Icotinib Hydrochloride Tablets
38	Keyuxin	Gefitinib Tablets
39	Langmu	Conbercept Ophthalmic Injection
40	Novaferon	Recombinant Cytokine Gene Derived Protein Injection
41	Remicade	Infliximab for Injection
42	LYNPARZA	Olaparib Tablets
43	MYOZYME	Alglucosidase Alfa for Injection
44	MabThera	Rituximab Injection
45	Nuolining	Imatinib Mesylate Tablets
46	Lucentis	Ranibizumab Injections
47	Renvela	Sevelamer Carbonate Tablet
48	Perjeta	Pertuzumab Injection
49	Punuoan	Ambrisentan Tablets
50	Qipule	Bortezomib for Injection
51	Qipuyi	Lenalidomide Capsules
52	Qianping	Bortezomib for Injection
53	Qingkeshu	Abiraterone Acetate Tablet
54	Tracleer	Bosentan Dispersible Tablets
55	Revlimid	Lenalidomide Capsules
56	Ruinuoan	Bortezomib for Injection
57	XALKORI	Crizotinib Capsules
58	SANDOSTATIN LAR	Octreotide Acetate Microspheres for Injection
59	Xeljanz	Tofacitinib Citrate Tablets
60	SPRYCEL	Dasatinib
61	Ouke	Shidaoping san
62	Cerezyme	Imiglucerase for Injection
63	Sirturo	Bedaquiline Fumarate Tablets
64	SUTENT	Sunitinib Malate Capsules
65	TAGRISSO	Osimertinib Mesylate Tablets
66	Taixinsheng	Nimotuzumab Injection
67	Tarceva	Erlotinib Hydrochloride Tablets
68	Velcade	Bortezomib for Injection
69	VIDAZA	Azacitidine for Injection
70	VOTRIENT	Pazopanib Tablets
71	Weishou	Azacitidine for Injection

72	Harvoni	Ledipasvir and Sofosbuvir tablets
73	Xinwei	Imatinib Mesylate Tablets
74	Xinyang	Abiraterone Acetate Tablets
75	HUMIRA	Adalimumab Solution for Injection
76	Yiruike	Gefitinib Tablets
77	Yinishu	Dasatinib Tablets
78	IMBRUVICA	Ibrutinib Capsules
79	Iressa	Gefitinib Tablets
80	Yijiu	Bortezomib for Injection
81	Inlyta	Axitinib Tablets
82	Uptravi	Selexipag Tablets
83	Zykadia	Ceritinib Capsules
84	Zepatier	Elbasvir and Grazoprevir Tablets
85	Zytiga	Abiraterone Acetate Tablet
86	Zavesca	Miglustat Capsules
87	Xolair	Omalizumab for Injection
88	Zhuorong	Abiraterone Acetate Tablet
89	Zelboraf	Vemurafenib film-coated tablets

Appendix 3：Shanghai HuHuiBao CSI Specialty Drug Formulary 2021

	Trade Name	Generic Name
1	OPDIVO	Nivolumab Injection
2	Keytruda	Pembrolizumab Injection
3	Vizimpro	Dacomitinib Tablets
4	IMFINZI	Durvalumab Injection
5	Baizean	Tislelizumab Injection
6	Tecentriq	Atezolizumab Injection
7	Ibrance	Palbociclib Capsules
8	Kadcyla	Trastuzumab Emtansine for Injection
9	Firmagon	DegarelixAcetateforInjection
10	Zele	Niraparib Tosylate Capsules
11	Tuoyi	Toripalimab Injection
12	Adcetris	Brentuximab Vedotin for Injection
13	Yinuokai	Orelabrutinib
14	BLINCYTO	Blinatumomab for Injection
15	Tasigna	Nilotinib
16	Optune	Tumor Treating Fields –TTFields
17	Hunterase	Idursulfase Beta Injection
18	REPLAGAL	Agalsidase Alfa Concentrated Solution for Infusion
19	Fabrazyme	Agalsidase Beta for Injection
20	VIMIZIM	Elosulfase alfa injection
21	Vyndaqel	Tafamidis Meglumine Soft Capsules

Appendix 4：7 drugs adjusted by HuHuiBao after the 2021 NRDL update

	Trade Name	Generic Name
1	Vizimpro	Dacomitinib Tablets
2	Baizean	Tislelizumab Injection
3	Zele	Niraparib Tosylate Capsules
4	Tuoyi	Toripalimab Injection
5	Yinuokai	Orelabrutinib
6	Tasigna	Nilotinib
7	REPLAGAL	Agalsidase Alfa Concentrated Solution for Infusion

Appendix 5：Shanghai HuHuiBao CSI Specialty Drug Formulary 2022

	Trade Name	Generic Name
1	OPDIVO	Nivolumab Injection
2	Keytruda	Pembrolizumab Injection
3	IMFINZI	Durvalumab Injection
4	Tecentriq	Atezolizumab Injection
5	Ibrance	Palbociclib Capsules
6	Kadcyla	Trastuzumab Emtansine for Injection
7	Firmagon	DegarelixAcetateforInjection
8	Adcetris	Brentuximab Vedotin for Injection
9	BLINCYTO	Blinatumomab for Injection
10	Optune	Tumor Treating Fields –TTFields
11	Hunterase	Idursulfase Beta Injection
12	Fabrazyme	Agalsidase Beta for Injection
13	VIMIZIM	Elosulfase alfa injection
14	Vyndaqel	Tafamidis Meglumine Soft Capsules
15	VENCLEXTA	Venetoclax Tablets
16	Kyprolis	Carfilzomib
17	Besponsa	inotuzumab ozogamicin
18	Lonsurf	Trifluridine and Tripiracil Hydrochloride Tablets
19	QARZIBA	Dinutuximab beta
20	Afinitor	Everolimus
21	Avastin	Bevacizumab Injection
22	Ruishidi	TreprostinilInjection
23	ORPATHYS	Savolitinib Tablets
24	Verzenios	Abemaciclib Tablets
25	QINLOCK	Ripretinib Tablets

Appendix 6：List of CSIs that can reimburse Car-T treatment

Chengdu Huirongbo
Hebei JiHuibao
Hebei PuHuibao
Hunan AiMinbao
Suining HuiSuibao
Lanzhou JinCheng HuiYibao
Shanxi JinHuibao
Beijing JingHuibao
Shenzhen PengChengbao
ShuiDibao
Rizhao NuanXinbao
Suzhou SuHuibao
Taiyuan WanHuJianKangbao
Wenzhou YiKangbao
Wuhan HuiYibao
Hangzhou XiHuYiLiangbao
Zhongshan XiangShanbao
Yantai JianKangbao
Hebei YanZhaoJianKangbao
Changsha HuiMinbao
Henan ZhongYuanYiHubao
Chongqing YuKuaibao

Appendix 7: GuangZhou HuiMinbao CSI (Basic Version) Specialty Drug Formulary

	Trade Name	Generic Name
1	Airuika	Camrelizumab for Injection
2	Ibrance	Palbociclib Capsules
3	Adcetris	Brentuximab Vedotin for Injection
4	Aubagio	Teriflunomide Tablets
5	Baizean	Tislelizumab Injection
6	Dabuoshu	Sintilimab Injection
7	Vizimpro	Dacomitinib Tablets
8	Enruige	Deferasirox Dispersible Tablets
9	Jakavi	Ruxolitinib Phosphate Tablets
10	Kevan	Sapropterin Dihydrochloride Tablets
11	Leike	Infliximab for Injection
12	LYNPARZA	Olaparib Tablets
13	Tracleer	Bosentan Dispersible Tablets
14	Shansida	Paliperidone Palmitate Injection
15	Somatulin	Lanreotide acetate for injection
16	Tuoyi	Toripalimab Injection
17	Mayzent	Siponimod Tablets
18	Zavesca	Miglustat Capsules

Appendix 8: Guangzhou HuiMinbao CSI (Upgraded Version) Specialty Drug Formulary

	Trade Name	Generic Name
1	Aibuoding	Cladribine Injection
2	Aldurazyme	Iduronidase
3	Aifusha	Furmonertinib Mesilate Tablets
4	Ainituo	Temozolomide for Injection
5	Airuiyi	Fluzoparib
6	Ibrance	Palbociclib Capsules
7	Aidixi	Disitamab Vedotin For Injection
8	Epidaza	Chidamide
9	XGEVA	Denosumab Injection
10	XTANDI	Enzalutamide Soft Capsules
11	Baizean	Tislelizumab Injection
12	Beimeina	Ensartinib Hydrochloride Capsules
13	BLINCYTO	Blinatumomab for Injection
14	Daboshu	Sintilimab Injection
15	Hunterase	Idursulfase Beta Injection
16	NERLYNXO	Neratinib Maleate Tablets
17	Kadcyla	Trastuzumab Emtansine for Injection
18	Gazyva	obinutuzumab
19	Kevan	Sapropterin Dihydrochloride Tablets
20	Keytruda	Pembrolizumab Injection
21	Leweixin	Bendamustine Hydrochloride for Injection
22	LENVIMA	Lenvatinib Mesilate Capsules
23	EVOMELA	Melphalan Hydrochloride for Injection
24	Spinraza	nusinersen
25	OPDIVO	Nivolumab Injection
26	GAVRETO	Pralsetinib Capsules
27	Ruinier	TreprostinilInjection
28	Cerezyme	Imiglucerase for Injection
29	SULANDA	Surufatinib Capsules
30	Tuoyi	Toripalimab Injection
31	AYVAKIT	Avapritinib Tablets
32	Tecentriq	Atezolizumab Injection

33	VENCLEXTA	Venetoclax Tablets
34	VIMIZIM	Elosulfase alfa injection
35	Vyndamax	Tafamidis Soft Capsules
36	Yinuokai	Orelabrutinib
37	IMFINZI	Durvalumab Injection
38	ZEPSUN	Donafenib Tosilate Tablets

Appendix 9: Beijing PuHuiJianKangbao CSI Specialty Drug Formulary

Domestic Drug Formulary		
	Trade Name	**Generic Name**
1	OPDIVO	Nivolumab Injection
2	Vizimpro	Dacomitinib Tablets
3	Baizean	Tislelizumab Injection
4	Aifusha	Furmonertinib Mesilate Tablets
5	IMFINZI	Durvalumab Injection
6	Tecentriq	Atezolizumab Injection
7	Keytruda	Pembrolizumab Injection
8	Kadcyla	Trastuzumab Emtansine for Injection
9	Ibrance	Palbociclib Capsules
10	NERLYNXO	Neratinib Maleate Tablets
11	Airuiyi	Fluzoparib
12	PARTRUVIX	Pamiparib Capsules
13	ERLEADA	Apalutamide Tablets
14	DARZALEX	Daratumumab Injection
15	Adcetris	Brentuximab Vedotin for Injection
16	Yinuokai	Orelabrutinib
17	Tuoyi	Toripalimab Injection
18	Optune	Tumor Treating Fields – TTFields
19	LENVIMA	Lenvatinib Mesilate Capsules
20	Kevan	Sapropterin Dihydrochloride Tablets
21	Tasigna	Nilotinib
22	Erbitux	Cetuximab Solution for Infusion
23	Verzenios	Abemaciclib Tablets
24	VENCLEXTA	Venetoclax Tablets
25	BLINCYTO	Blinatumomab for Injection

Foreign Drug Formulary		
	Trade Name	Generic Name
1	Besponsa	Inotuzumab Ozogamicin
2	Daurismo	Glasdegib
3	Idhifa	enasidenib
4	Mylotarg	Gemtuzumab Ozogamicin
5	Onureg	Azacitidine
6	Rydapt	Midostaurin
7	Tibsovo	ivosidenib
8	VENCLEXTA	Venetoclax
9	Sprycel	Dasatinib Tablets
10	Panretin	Alitretinoin
11	Calquence	Acalabrutinib
12	Kymriah	tisagenlecleucel
13	RITUXAN HYCELA	Rituximab/hyaluronidase human
14	Pemazyre	pemigatinib
15	Abecma	idecabtagene vicleucel
16	BLENREP	Belantamab Mafodotin-blmf
17	Elotuzumab	EMPLICITI
18	Pomalyst	Pomalidomide
19	Sarclisa	Isatuximab
20	Darzalex	Daratumumab Injection
21	Alunbrig	Brigatinib
22	Lorbrena	Lorlatinib
23	Tabrecta	Capmatinib
24	Tepmetko	Tepotinib
25	Zepzelca	lurbinectedin
26	FIRDAPSE	amifampridine
27	Pepaxto	melphalan flufenamide
28	IMFINZI	Durvalumab Injection
29	Mekinist	Trametinib Tablets
30	Tafinlar	Dabrafinib Mesylate Capsules
31	Retevmo	selpercatinib
32	Gavreto	Pralsetinib Capsules
33	Keytruda	Pembrolizumab Injection
34	Inrebic	Fedratinib
35	Cotellic	Cobimetinib
36	Mektovi	Binimetinib
37	Yervoy	Ipilimumab
38	OPDIVO	Nivolumab Injection
39	LENVIMA	Lenvatinib Mesilate Capsules
40	BRAFTOVI	Encorafenib

41	LONSURF	Trifluridine and Tripiracil Hydrochloride Tablets
42	Adcetris	Brentuximab Vedotin for Injection
43	Zynlonta	loncastuximab tesirine-lpyl
44	Istodax	romidepsin
45	Polivy	polatuzumab vedotin-piiq
46	TECARTUS	brexucabtagene autoleucel
47	UKONIQ	umbralisib
48	IMBRUVICA	Ibrutinib Capsules
49	Bavencio	Avelumab
50	Balversa	Erdafitinib
51	Padcev	Enfortumab vedotin
52	Xtandi	Enzalutamide
53	XPOVIO	selinexor
54	Herceptin Hylecta	Tratuzumab/hyaluronidase-oysk
55	Kisqali	Ribociclib
56	Margenza	Margetuximab
57	Phesgo	Pertuzumab/trastuzumab/Hyaluronidase-zzxf
58	Piqray	Alpelisib
59	Talzenna	Talazoparib
60	Kadcyla	Trastuzumab Emtansine for Injection
61	Tecentriq	Atezolizumab Injection
62	Trodelvy	Sacituzumab Govitecan for Injection
63	Enhertu	Trastuzumab Deruxtecan
64	VOTRIENT	Pazopanib Tablets
65	Halaven	Eribulin Mesilate Injection
66	Qarziba	Dinutuximab Injection
67	Koselugo	Selumetinib
68	Fotivda	tivozanib
69	Rozlytrek	Entrectinib
70	Onivyde	Irinotecan Hydrochloride Injection
71	Jemperli	dostarlimab
72	Sylvant	Siltuximab Injection
73	Reblozyl	Luspatercept-aamt
74	Jakavi	Ruxolitinib Phosphate Tablets
75	Leqvio	Inclisiran

Appendix 10: Hebei YanZhaoJianKangbao CSI Specialty Drug Formulary

Domestic Drug Formulary		
	Trade Name	**Generic Name**
1	OPDIVO	Nivolumab Injection
2	Firmagon	DegarelixAcetateforInjection
3	Tecentriq	Atezolizumab Injection
4	Ibrance	Palbociclib Capsules
5	Tykerb	Lapatinib Ditosylate Tablets
6	QINLOCK	Ripretinib Tablets
7	Kadcyla	Trastuzumab Emtansine for Injection
8	Optune	Tumor Treating Fields – TTFields
9	TAGRISSO	Osimertinib Mesylate Tablets
10	VPRIV	Velaglucerase Alfa for Injection
11	Ainituo	Temozolomide for Injection
12	Kevan	Sapropterin Dihydrochloride Tablets
13	Vyndaqel	Tafamidis Meglumine Soft Capsules
14	Ofev	Nintedanibe silate soft capsules
15	IMFINZI	Durvalumab Injection
16	ORPATHYS	Savolitinib Tablets
17	Airuika	Camrelizumab for Injection
18	VENCLEXTA	Venetoclax Tablets
19	QARZIBA	Dinutuximab beta
20	DARZALEX	Daratumumab Injection
21	Adcetris	Brentuximab Vedotin for Injection
22	GAVRETO	Pralsetinib Capsules
23	TAFINLAR	Dabrafenib mesylate capsules
24	Mekinist	Trametinib tablets
25	Yutuo	Zimberelimab Injection

Foreign Drug Formulary		
	Trade Name	Generic Name
26	Verzenios	Abemaciclib Tablets
27	Tibsovo	ivosidenib
28	Lorbrena	Lorlatinib
29	Trodely	Sacituzumab Govitecan forinjection
30	Yervoy	Ipilimumab
31	Elzonris	Tagraxofusp-erzs
32	Balversa	ERDAFITINIB
33	Talzenna	Talazoparib
34	COMETRIQ	Capmatinib
35	Tabrecta	Capmatinib
36	Idhifa	enasidenib
37	Besponsa	Inotuzumab ozogamicin
38	Abecma	Idecabtagene vicleucel
39	Alunbrig	Brigatinib
40	Keytruda	Pembrolizumab Injection
41	Inrebic	Fedratinnib
42	Cotellic	Cobimetinib
43	Polivy	Polatuzumab vedotin-piiq
44	TECART US	Brexucabtaenen autoleucel
45	Xtandi	enzalutamide
46	Herceptin Hylecta	Tratuzumab/hyaluronidaseoysk
47	Plqray	Alpelisib
48	Kisqali	Ribociclib
49	Jemperli	Dostarlimab
50	Leqvie	Inclisiran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