Maintaining a Safe and High-quality Supply of Products

Pharmaceuticals Business: Resource Procurement, Production, and Assurance

Material issues and related SDGs

Realizing a healthy future by creating innovation

Strengths

- **Promotes DX and grows to include manufacturing sites that can handle global demand for pharmaceuticals with new modalities, such as nucleic acid**
- **Unified supply chain-related departments that extend from raw material procurement to postmarketing surveillance and robust, stable supply system that promotes risk management**
- **Resource Procurement, Production & Assurance Division that is involved from early development stage and contributes to development of pharmaceuticals**

Through strong lateral collaboration as the division responsible for pharmaceutical safety and security, we fulfill the basic mission of a pharmaceutical company

Hitomi Kimura
Director, Resource Procurement, Production & Assurance

In February 2024, we were able to complete construction of the nucleic acid API purification plant at the Odawara Central Factory, which was scheduled to be completed during the period of the 6th Five-Year Medium-Term Management Plan. Through the 7th Five-Year Medium-Term Management Plan, we will steadily work to establish the production process. This is not only the first time we will conduct API purification at the Odawara Central Factory, but also our first attempt at commercial production of middle molecule drugs. We will continue to work together to tackle this issue.

The Resource Procurement, Production & Assurance Division, which I manage, is responsible for our basic mission as a pharmaceutical company—that is, to ensure efficacy and safety and to provide a stable supply of high-quality pharmaceuticals. At the weekly meeting of department managers, there is an exchange of opinions regarding issues and what should be done next, which makes it possible to conduct work with a mutual understanding of others' work. One of the division's strengths is the strong lateral collaboration between departments.

Our division is responsible for raw material procurement and production planning and plays an important role in supporting the Sales and Marketing Division and R&D Division. In the past, production plans were closely linked to the planner because they were based on that person's experience, but we have built a system that automatically proposes highly precise production plans using AI and statistic models, and are moving forward with more appropriate inventory management by adhering to newly set risk-based, safe inventory standards. At the Odawara Central Factory, we are also moving forward with examining the use of AI for the visual inspection of vials, and will work to further increase its accuracy for actual use.

An issue is our lack of experience in overseas markets. If we export our pharmaceuticals for rare diseases, it will be necessary to strengthen our local information gathering capabilities in order to respond to strict regulations of each country and cultural differences between countries. When supplying products overseas, it is also important to collaborate with affiliated companies throughout the whole supply chain and reliability assurance system. Furthermore, I would like to reinforce meetings with related departments and the mutual dispatch of workers and increase experience in order to overcome language and cultural barriers. As the department responsible for pharmaceutical safety and security, we will do all that we can to provide patients worldwide with a stable supply of high-quality, unique pharmaceuticals.

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Overview of and Remaining Issues Related to 6th Five-Year Medium-Term Management Plan

Spreading our sustainable procurement policy

As one part of our efforts to actively promote sustainable procurement, we reworked our Responsible Procurement Guidelines into a Sustainable Procurement Policy and requested that key business partners know this policy and cooperate with procurement activities based on this policy. In FY2023, we revised this policy to make it consistent with related policies and registered partnership construction statements in order to create coprosperity with suppliers.

We will work to further spread our Sustainable Procurement Policy by introducing this policy throughout the Nippon Shinyaku Group and formulating a supplier code of conduct that reflects this policy and undertaking activities to educate and obtain the consent from business partners.

Increasing demand forecast precision using digital technology

Through the 6th Five-Year Medium-Term Management Plan, we not only achieved highly precise demand forecasts using advanced statistical models based on actual past sales data and AI systems but also the automation of production planning operations by combining this with existing ERP system functions. We also set risk-based safe inventory criteria and built an operable system.

We will conduct inventory management that balances stable supply and appropriate inventory volume by verifying the system and quickly reflecting changes in demand in production plans.

Construction of the Odawara nucleic acid API purification plant

It was proposed that we construct a nucleic acid API purification plant within the Central Factory in order to provide a stable supply of nucleic acid drugs. After obtaining in-house approval in June 2021, we completed construction in February 2024 as planned after about thirty months of planning and building.

Construction of a reliability assurance system

For the Production & Assurance Division, work is progressing smoothly, which has entailed ensuring the maintenance and management of production and marketing approval for our various products in Japan and establishing a reliability assurance system for sales of Viltepso in the U.S. and Gaslon N tablets 2mg in China. As for post-manufacture and marketing surveys, we started our first database survey and are making progress as planned.

Strategy and Future Initiatives to Implement 7th Five-Year Medium-Term Management Plan

Develop and strengthen global supply chain

In order to develop and strengthen our global supply chain, we will undertake the following activities related to procurement, production, and logistics in order to establish a competitive supply system while keeping stable supply and cost management in mind.

1. Reinforcing sustainable procurement initiatives and reducing procurement costs

The Sustainable Procurement Policy has been adopted as the group-wide procurement policy and is being introduced throughout the Nippon Shinyaku Group. We will formulate a Supplier Code of Conduct, which reflects this policy, and are moving forward with informing and gaining the approval of key business partners. In addition to coordinating and evaluating various types of surveys, including CSR procurement and stable supply surveys, and examining appropriate feedback methods for business partners, we are investigating ways to efficiently and effectively conduct supplier due diligence and environmental response surveys in partnership with key departments.

Furthermore, we will continue to work to reduce raw material procurement costs for nucleic acid drugs and key products through such activities as changing and adding suppliers and revising unit purchase price.

2. Developing and invigorating Odawara Central Factory's global supply system

To provide a stable supply of a therapy for Duchenne muscular dystrophy, a growth driver for Nippon Shinyaku, we are working to strengthen our global supply system by ensuring the launch of production at our nucleic acid API purification plant.

Furthermore, we are promoting the manufacturing of oral solid doses and aiming to establish a highly reliable supply chain for the whole product lifecycle by accumulating proprietary production technology and accelerating the launch of pharmaceuticals through the smooth shift to commercial production, in order to contribute to greater value of existing buildings, including the building for highly active solid formulations, and shorter development time for in-house products.

To generate sustainable growth, we are also working to increase productivity through such activities as automating operations that make use of digital technology and leveraging data, and to maximize throughput for the whole plant and create a highly competitive production system.

3. Creating a global supply chain system for new modalities

With an eye toward expanding the regenerative medicine products business internationally, we will build a supply chain system that meets the regulations of each country and region in order to offer a stable supply of our drugs and expand new sales areas beyond Japan, the U.S, and China. Along with this response to new modalities, we will increase the competitiveness of our supply chain by establishing an end-to-end cold chain, which includes low-temperature production and storage, and reinforcing quality and inventory control system.

Building a system that can handle regulations in a wide range of countries

The Production & Assurance Division strives to ensure the quality, efficacy, and safety of products by appropriately conducting various operations, including ensuring the reliability of application data, pharmaceutical applications and the maintenance of approvals, ensuring product quality, managing safety information, conducting post-manufacture and marketing surveys, and handling consultations regarding medicines, at all stages from R&D to product launch and beyond. As for future initiatives, we will deliver safe, high-quality products to patients worldwide in partnership with supply chain members by building a system to handle not only domestic laws and regulations* but also regulations in the various countries we sell products.

*Domestic laws and regulations
Act on Securing Quality, Efficacy and Safety of Products Including Pharmaceuticals and Medical Devices: Law related to such issues as ensuring the quality, efficacy, and safety of pharmaceuticals, medical devices, etc.
GQP ministerial ordinance: Ministerial ordinance related to quality management standards for pharmaceuticals, quasi-drugs, cosmetics and regenerative medicine products
GVP ministerial ordinance: Ministerial ordinance related to post-manufacture and marketing safety management standards for pharmaceuticals, quasi-drugs, cosmetics, medical devices, in vitro diagnostics, and regenerative medicine products
GPSP ministerial ordinance: Ministerial ordinance related to conducting post-manufacture and marketing surveys and tests of pharmaceuticals

Establishing a reliability assurance system for new modalities, including biopharmaceuticals

To address diseases for which there are no effective traditional small molecule drugs, we are working to develop drugs with new modalities. We will create a system to ensure the reliability for these modalities, too.

Using post-marketing safety information

We will develop plans that make more meaningful use of post-manufacture and marketing survey, which are conducted as one of our post-marketing safety measures, and make the results public through academic papers, etc., in a timely manner. This will be used to increase product value and promote proper use.

NIPPON SHINYAKU PEOPLE

Partnerships that are growing more complex due to globalization

I am responsible for the packaging process at the Odawara Central Factory's Production Department, and we are promoting factory automation in order to reduce the number of required workers. Recently, we have examined using AI to automate the visual inspection of vials. For vials that contain freeze-dried preparations, we rely on people to conduct visual inspections because there are numerous inspection points and complex decision criteria. It would be best, however, to automate the process because the work takes a lot of time and places a heavy burden on workers. With the idea that it may be possible to automate the inspection process using AI, we started tests using various AI engines and were ultimately able to determine good and defective vials using an AI model that we developed. We are now moving forward with an examination of installing this automated inspection equipment.

Toru Ichikawa
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