

World first self-donning system for surgical gowns

May 16 2017



Left to right: Assisting neck strings, assisting waist strings, assisting inner strings.
Credit: Osaka University

In the health care setting, there is an increasing need for a self-donning surgical gown that health care personnel can don without the need for any assistance. Also, in the context of Crisis Management for the Ebola virus and other severe infectious diseases, use of a gown that can be donned and removed quickly and safely as infection protection to prevent onwards transmission to environmental infection is more important than ever.

The research group led by Kiyokazu Nakajima, professor at the Global Center for Medical Engineering and Informatics, Osaka University, has succeeded in developing a safe and easy self-donning and self-adjusting surgical [gown](#) called "Selfgown," which could also minimize

environmental infection from splashes when taking off gloves.

The group has been working on R&D of medical devices and non-medical equipment to reduce labor burden of medical support staff and to ensure the best use of human resources in order to improve the work environment in [health care](#) settings. In this study, the group responded to the strong need to develop a self-donning, self-adjusting surgical gown and succeeded in commercialization after 2 years of R&D.

Conventional surgical gowns are designed to have an assistant tie strings or a belt around the neck, inner gown, and waist to keep arms and hands inside the sterile field. The new gown is comprised of a special spring along the neckline instead of strings. The inner belt is removed by applying a three-dimensional structure on the rear torso portions to overlap each other. Applying sticky tape on a transfer card for temporary adhesion and forming a special perforation at the end of the waist belt led to the realization of this groundbreaking self-donning, self-adjusting surgical gown.



Left to right: This is a special ring around neck, temporary fixing function, tear along perforation. Credit: Osaka University

The notable feature of this gown is that there is practically "zero splashing" of infectious substances from the gloves as the wearer can

take off the gown while wrapping the gloves inside-out at the same time, as opposed to a conventional gown where the wearer needs to take off the gloves first in order to undo the strings and the belt.

"We exercised our ingenuity to develop a special ring around the neck and to optimize the structure of rear torso portions to overlap each other," said Nakajima. "We finally established a self-donning, self-adjusting system after 18 months of research, making 41 prototypes while conducting 17 animal experiments, 5 clinical trials and incorporating evaluations from over 100 surgeons in Japan and overseas. We were able to develop this groundbreaking gown through advice from infection control and critical care specialists. We wish to widely promote our achievement."

This gown will prevent medical accidents, which are becoming a serious problem, and provide safe and secure medical care. It will also enable medical professionals to initiate immediately at large-scale disasters, emergency areas, and disease outbreaks. Eventually, it may be adapted into nursing care or even use outside of medical care, such as waste disposal or radioactive decontamination work. This gown is now available



Left to right: Unfastening neck ring, taking off the gloves with gown wrapped around, gloves and gown (after removal). Credit: Osaka University

Provided by Osaka University

Citation: World first self-donning system for surgical gowns (2017, May 16) retrieved 8 May 2024 from <https://medicalxpress.com/news/2017-05-world-self-donning-surgical-gowns.html>

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