Abstract: In this paper we describe the introduction of human interface concept in medical field for new medication systems. The method of taking a new medicine is designed by clarifying the relation between man and the medicine. As a result, we find the difference viewpoint among medicine manufacture, medical staff and patients. We could design a new safety syringe and a dry powder inhaler device used by product design methods. It should be noted that medicine components, medicine effects were not changed. We could develop new solution for medical safety and usefulness of medication by design. We identify this design development as peace keeping design project. And it seems to be one of the methods of human-centered design.

Key words: Product design, Peace-keeping design project, medicine, drug, human interface

1. Introduction
The medical treatment will become important more and more in the future. A lot of design cases of medical equipment have come to be shown, too [1]. However, the design of the medicine is not performed still enough. The problem to surround the medicine includes the safety problem and the problem of the patent. In the safety problem, the event that receives the health hazard in an improper medicine's circulating occurs in many parts of the world. The design that secures the safety of the medicine is needed for such a problem.

I think that the issue in the design is to adjust the interaction environment between patient and medicine. In this research, we clarify the fundamental connection in a human interface of the medicine and the person. And, the method of a new taking medicine is proposed. The method of designing the future is considered based on these results.

2. Methods
2.1 Introduction human-machine interface in medical field
Human-interface concept is possible to think the touching side when the tool, the equipment, the environment, and human pile up the relation and it goes to be an interface. Then, when the concept of the human-machine interface is applied to the medical treatment, the interaction of the equipment and the medicine that centers on the patient can be considered.
2.2 Human behavior and interaction on medicine

If there are no information about medicine effect, component, and dose regimen, we are not able to identify intended medicine. The patient takes the medicine of the decided usage dosage based on this prescription. In a word, the interaction of the medical treatment person and the patient is generated here. So, we make clear the medicine form and packaging inform how many information for patient and medical staff.

2.3 Product design for new dosage equipments

We design new medicine dosing device. These equipments are designed by product design methods. Product design methods are basic design development process. First, we do design survey for gathering data. In this research, section 3.1 and 3.2 are proper for design survey. Second, we decide a design concept. Then, we used by sketch and prototyping method for coming up ideas. Finally, detail design is decided on drafting and CAD/CAM systems.

3. Result

3.1 Interaction in medical environment

Figure 1 shows classification of interaction in medical environment. There are relation of patient and medicine, interaction through medicine and human and equipment in shared environment. This figure is basic structure for thinking of new medication design.
3.2 Medicine manufacturing and human interface

Figure 2 shows the relation of medical agent to behavior in a body. The medicine is conditioned at each stage of manufacturing and use. Because most effected shape and dosage option are important in medial care. But there are difference of viewpoint from manufacture, medical staff and patient.

![Figure 2 Viewpoint of medicine design](image)

3.3 Design development of new dosage device

After design surveys, we could design items for patient safety. For example, we show a safety syringe and a dry powder inhaler device.

3.3.1 Safety syringe

Injection medicine is not able to see. And patient can’t identify what kind of medicine packed in syringe. So some people feel uneasy. Sometimes, the counterfeit drug might be packed. We designed new syringe, which is single use, easy use, and easy understand medicine information (Figure 3).

![Figure 3 Safety syringe](image)

3.3.2 Dry powder inhaler (DPI) device

DPI is a one of the dosage system. The particle size of dry powder inhale are 0.5 to 70 $10^{-6}$ m. These particle are snorted through the mouse include air. Particle goes to the lung directory. The advantages of dry powder inhaler are, no water, quickly drug efficiency and low hepatic metabolism. This dosage method is used to apply asthma care and COPD (chronic obstructive pulmonary disease). The matter of dosage, if various drugs provide same device, we are not able to make out right drug. So the shape of drug sheet hole fit device terminate shape (Figure 4).
4. Discussion

4.1 Advanced design for medication

We show some advanced design model of medication. It should be noted that medicine components, medicine effects were not changed. We could develop new solution for medical safety and usefulness of medication by design. These design approach for new dosage device is a new case study of experience design for human behavior. In particular, we think that the safety mechanism of fitting device shape in medicine package sheet shape has been improving new dosage culture.

4.2 Medicine and design methods

We introduced design and human interface relationship. Today, design field is expanding to new situation. Designer and design scientist have to corroborate with new professional people.

In this research, basic human-medicine interface concept was showed based on human-machine interface concept. Some concept and word were not used in design field. We think that these word and arrangement of technical terms is predictably effective research for build good communication of new medicine design study.

5. Conclusion

We could think about basic human-interface of medication. Health care is the world issue. Basic human life support, like this design study, relate to the world peace. In other hand, the peace-keeping design project was started in Japan. This design project leads design to important thinking way of world development. We think that in this design research is considered the basic information of peace-keeping design project [2]. And it seems to be one of the methods of human-centered design.

6. References
