A NOVEL CLOSED SYSTEM DRUG-TRANSFER DEVICE FOR ORAL DOSAGE FORM HELPING PATIENTS WHO CANNOT SWALLOW SOLIDS

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Background

To date, there is no closed system known in the world for the crushing of solid drugs (especially hazardous drugs) and their dilution / suspension under conditions that are closed to the environment, which will also be safe for the care giver (pharmacists and nurses) in order to administer to patients who cannot swallow solids

Keywords

CLOSED SYSTEM DRUG-TRANSFER DEVICE
SAFE HANDLING
DRUG ADMINISTRATION
ORAL CYTOTOXIC DRUGS

Study Aim

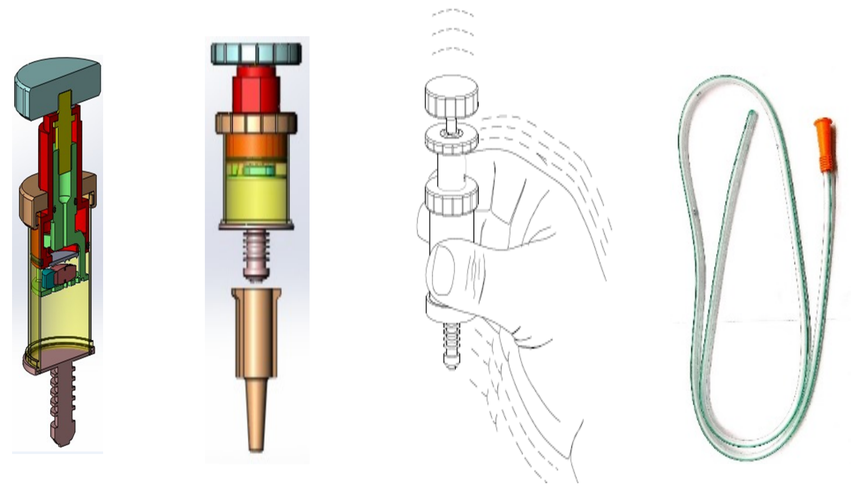
Two main drawbacks of the known solutions:

1. The crushing and dilution of the solid dosage form medicine done with an open vessel to the environment, such as porcelain crater, which may cause the work environment to be contaminated with carcinogenic or teratogenic substances
2. The tools available today are reusable, requiring a thorough cleaning process between different drugs, which can lead to cross-contamination

- The main goal is to develop a single use device that can help the caregivers give solid drugs to patients who are unable to swallow ،safely , easy to use near the patient bed, and also cheap

Materials & Methods

- We designed the device with 3D software (solid wark) consists of a number of functional parts, The main ones are: a 20 ml barrel, a top part of which is piston with a bottom basket loaded with the solid medicine, this part is sealed as a barrel from above, with the help of mechanical rotation, the drug breaks down into small particles that fall into the inner space of the barrel,
- Adding the liquid through a fluid port disposed on the bottom barrel which it is completely sealed, The removal of the liquid drug through a unique adapter which at its end is adapted to the gastric tube or oral administration to the patient



Results

1. The complete process of crushing and liquefying of the solid drugs is carried out under sealed conditions to the immediate environment and without fear of exposure to residues of toxic substances to the medical caregiver.
2. A one-time use system saves complex cleaning process
3. There is no risk of cross-contamination between different drugs
4. Saving personal protective equipment such as gloves, masks, lab coats, clean rooms, etc. which is necessary for protect and for the safety of the caregiver team

Conclusion

- Status: Testing the initial prototype with several drugs commonly used in the oncology and hemato-oncology departments,
- Through operating the new device, should significantly reduce risks to pharmacists and nurses, and help patients who cannot swallow solids have their medicine properly