To design and develop an adult nasogastric tube insertion simulator for medical students and staff to develop suitable skills before attempting nasogastric intubation on patients.

Delivering instantaneous feedback to the trainee during the initial insertion attempts leads to rapid learning and skills development. Having the simulator produce audible, visual and tactile feedback was an essential design element.

Two main components;  
1. an upper body manikin that would accept a range of nasogastric tubes.  

BENEFITS WITH USING A SIMULATOR

- No risk to a patient.  
- Controlled environment.  
- Convenient access.  
- Productive feedback.  
- Unusual situations.  
- Competency assessment.

HEAD

This head was donated at the beginning of the project by the CSSU.

CONTROL UNIT ELECTRONICS

This is the printed circuit board (PCB) which forms the heart of the control unit. The upper layer is show in red tracks and the bottom layer shows the blue tracks. Surface mount components were soldered to the bottom layer. A small rechargeable battery mounted inside the control unit powers the system.

METHOD

The electronics senses the progression through the simulator and lights up a series of green LED's on the control unit front panel when the tube progresses along the correct path into the stomach.  

There are also red LED's that show problematic tube progression.

UPPER BODY

An upper body was constructed to integrate with the completed head. Fast setting, non toxic moulding rubber was used to make an upper body mould.

CONCLUSION

Doctors can now practice on a quality simulator. Patients can rest easy. Less errors, Less harm, Lives saved.