Drones in Nursing Care

Drones, also known as RPAS (Remotely Piloted Aerial Systems) or Unmanned Aerial Vehicles (UAVS), are aircraft controlled by 'pilots' from the ground or autonomously following a pre-programmed mission in its software.

Uses for drones are many, from aerial photography, chasing down criminals, tracking down forest fires, precision agriculture to delivering critical food and medicines in emergency situations.

■ Reaching Disaster Areas

In healthcare, drones have been used to deliver food aid and medical supplies to areas hit by disaster, such as Haiti. Drones can deliver vaccines, medications and supplies very quickly. They can also help restore communication since they can be equipped with mobile communication technology.

■ Caring for Patients Outside Hospitals

In mid-July 2015, the first federally-approved medical drone delivered 24 packages of medical supplies to a free health care clinic for 3,000 residents in Wise Country, Virginia, one of the U.S.' most impoverished areas.

Drones can also be used to care for patients living at home with long-term illnesses such as dementia. As transport vehicles, they can deliver something as simple as a meal to a patient who cannot prepare his or her own meals.

■ Providing Health Care in Developing Countries

Remote rural areas do not get sufficient healthcare because of the dearth of doctors and medical facilities there.

Besides transporting vaccines and medicines to patients, drones can also deliver DNA samples from patients to healthcare professionals. With drones, nurses and doctors do not have to be physically present to draw samples themselves. Test kits can be loaded onto drones and patients can self-help by following instructions which are pre-installed or given live over video, radio or phone on the drone.

Dr. Timothy Amukele, a Johns Hopkins pathologist, conducted a proof-of-concept study to see if blood samples could be successfully transported via drone after visiting labs around the world, particularly in sub-Saharan Africa. He loaded some blood samples on a drone which then flew around for varying time periods between six to 38 minutes. Amukele wanted to find out if changes in air pressure, and the shaking of the drone in the wind and during the take-off and landing would affect the sample quality. Test results were apparently encouraging, and drones proved to be viable.

According to reports, "drone-ports" would be piloted in Rwanda later in 2016 where drones will be tested as transport vehicles for blood and other emergency supplies.

Another recent development happened at Delft University of Technology where teams tested if drones could deliver emergency equipment, such as defibrillators, for use in heart attack cases. If successful, drones' future as ambulance services would be certain.

■ Supporting Hospital Operations

In the future, nurses could be relieved from delivering medicine to a patient. Small indoor drones can fulfil this purpose quite easily. Nurses and pharmacists can work on tasks other than gathering and delivering basic items.

OBSTACLES

More widespread use of drones is expected. However, several obstacles remained in the way:

⊗ TECHNICAL OBSTACLES

- Size and weight of the drones and their payloads need to be reduced
- Ability to detect and avoid objects in their flight path need to be improved
- Hackers' mischief has to be pre-empted and prevented

⊗ LEGAL AND REGULATORY OBSTACLES

- Inventors and suppliers have to be properly licensed and regulated
- Road and air traffic laws and regulations need to incorporate the use of drones
- Safety and privacy issues should be addressed and public education is necessary

Conclusion

New technology promises great potential, as well as brings new issues and challenges. The upside with drones, however, far outweighs the downside.