Isolation Communication Management System (iSOCOMS) - Use of Telemedicine for Emerging Infectious Disease: A Case Series

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ABSTRACT

Introduction: Effective isolation is clearly needed for the safe care of patients with emerging infectious diseases (Ebola, MERS-CoV). Telemedicine provides a unique tool for improving patient and team safety in the care of these patients. iSOCOMS (Isolation Communication Management System) was a collaborative development of Hospital Epidemiology, the Medical Intensive Care Unit, Emergency Preparedness, and the office of Telehealth at the university to meet a diverse group of implementation:

1. Reduce the risk of exposure;
2. Improve access and efficiency;
3. Support individuals in isolation;
4. Improve educational opportunities;
5. Enable surveillance; and,
6. Enhance safety and quality control.

Results: iSOCOMS has been tested in the care of 3 PUI with over 100 hours of continuous use. The system has enabled clear communication with the patient (Figure 1 and 2), improved physical exams through the use of blue tooth stethoscopes (Figure 2), real-time observation of transport to the Special Pathogens Unit (Figure 3), and communication for the bedside nurse to the care team (Figure 2). This real-time observation tool has enabled prolonged physician involvement, decreasing the pool of physicians needed for each patient, as well as identification of opportunities for improvement in care delivery and transport.

Discussion: iSOCOMS is an innovative use of Telemedicine to create “virtual PPE” for the care of patients with potential for emerging pathogens and possible those with emerging pathogens like Ebola. On-going improvement to extend and refine its use are underway.

BACKGROUND

The 2014 Ebola epidemic highlights the need for improved infrastructure, technology, and preparedness for emerging and re-emerging infectious diseases. An interdisciplinary team met early in our planning process to determine if use of telehealth tools could facilitate patient and staff safety. Based on these conversations we developed a potential innovative approaches:

- Reduce the risk of exposure;
- Improve access and efficiency of care;
- Support individuals in isolation;
- Improve education opportunities;
- Enable surveillance;
- Enhance safety and quality control;
- Advance public health preparedness;

METHODS & RESULTS

- iSOCOMS uses secure, standards-based Cisco infrastructure to allow for the integration of fixed end-points, desktop video conferencing, mobile telehealth and on-line telehealth education through Star Telehealth.
- The UVA Center for Telehealth is centrally managed with fixed endpoints in 139 sites in the Commonwealth of Virginia and around the world.
- iSOCOMS has been used in 192 hours of continuous patient care and as well as an undocumented amount of training hours.
- This use has facilitated
  1. Direct observation of patients being unloaded and brought to the Special pathogens Unit (Figure 1 – through iPads we can observe the entire transport to the unit);
  2. Both in training and PUI care (Figure 2-3) direct communication with nurse and patient in room and observation of potential safety concerns;
  3. The ability for the patient to see the face of their healthcare team (Figure 4).

<table>
<thead>
<tr>
<th>Date</th>
<th>Isolation Hours</th>
<th>Outcome</th>
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<tbody>
<tr>
<td>PUI #1</td>
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<td>72 hours</td>
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<tr>
<td>PUI #2</td>
<td>March 2015</td>
<td>72 hours</td>
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<tr>
<td>PUI #3</td>
<td>April 2015</td>
<td>48 hours</td>
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DISCUSSION

iSOCOMS embraces the use of technology to facilitate what is not thought to be easily achievable – secure, standards-based videoconferencing technology with a provider in remote locations. It has also been shown to facilitate:

1. Support for the isolated patient by letting them see their care team’s face
2. Improved communication with the “in room” care team
3. Education opportunities (video feedback)
4. Healthcare safety through visualization and monitoring of patient transport and activities
5. Allows for only 2 MDs to provide 24/7 coverage for the duration of isolation
6. Allowed for tele-consults, increasing clinical expertise without increasing potential exposures, PPE utilization, and training.

Based on our experience we have developed further potential scenarios to use iSOCOMS in measles and MERS.

iSOCOMS is an innovative use of Telemedicine to create “virtual PPE” for the care of patients with the potential for emerging pathogens and possible those with emerging pathogens like Ebola. On going improvement to extend and refine its use are underway.

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