10-25-2019

Telemedicine Is Medicine, Tele-ICU Is ICU, and Tele-Healthcare Is Healthcare

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Telemedicine is Medicine, Tele-ICU is ICU, and Tele-Healthcare is Healthcare

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Background

- Connected health technologies make healthcare more effective and efficient by electronically connecting clinicians and patients and providing clinical-support to clinicians
- Tele-healthcare:
  - affords advanced physiologic monitoring
  - strengthens integration of clinical services
  - increases access to care
  - decreases patient mortality, complications, readmissions, and length of stay (LOS)
- Objectives:
  - Outline persistent and emerging healthcare challenges
  - Provide examples of BHSF's tele-solutions to aforementioned challenges

Persistent & Emerging Challenges

- ICU and PCU acuity/bed utilization
- ED surge, patient experience and ICU patients in the ED
- LOS and cost
- Disaster preparedness
- See the forest through the trees

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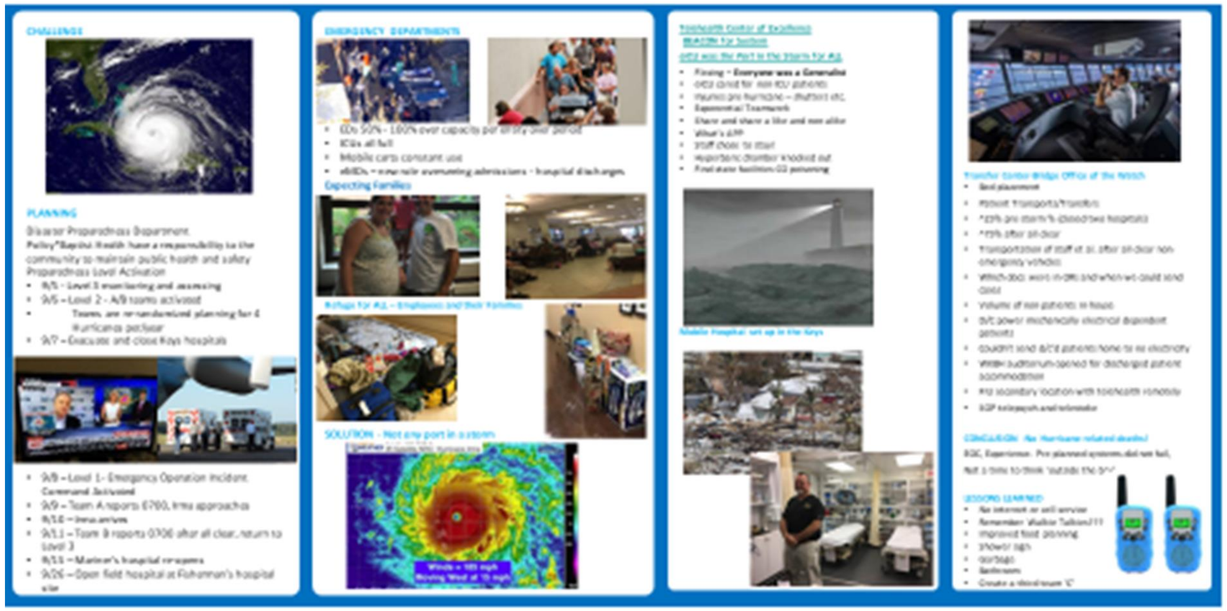
Tele-Solutions

- Example solution to ED surge, patient experience and ICU patients in the ED:
  - Tele-Triage to provide real time solution for unexpected surges in the department and improve 'door-to-doc' time and 'door-to-dispo-decision'
    - Compared tele-triage group and regular triage group for door-to-doc:

Cases vs. Control	Tele-triage significantly reduced time by:
Overall	25 min
Chest pain patients	45 min
Abdominal pain patients	20 min
Other pain patients	30 min

    - No significant differences for door-to-dispo decision, except for subgroup comprised of chest and epigastric pain.
      - In chest pain patients, tele-triage group had a decision made 40 min sooner than the regular triage group

- Example solution to disaster preparedness:
  - ICU without borders



Discussion

- To fulfill the promises of health information technology, we need to maximize positive patient care expertise, and provide solutions to persistent and emerging healthcare challenges
  - BHSF's tele-critical care hub-and-spoke model of care delivery promotes optimized access to evidence-based, patient-centered care
  - BHSF's Center for Advanced Analytics applies predictive analytics to the data from tele-applications

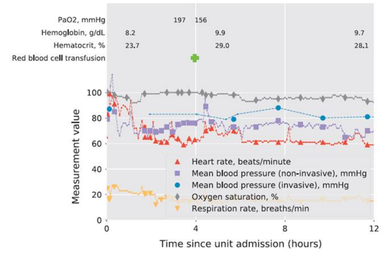


Figure 2. **Visualization of a single patient's stay.** Data shown are a subset of all data available, and include: high granularity vital signs (dashed lines, sourced from *vitalPeriodic* and *vitalAperiodic*), nurse validated vital signs (solid markers, sourced from *nurseCharting*), blood product administration (green cross, sourced from *intakeOutput*), and laboratory measurements (sourced from *lab*).

Source: www.nature.com/sdata

References

- Armaignac, Donna Lee. (2017). Teletriage: Application of a Tele-ICU Infrastructure to Enhance Patient Care Experience in the Emergency Department. *Telemedicine and eHealth* 23(4): A-45
- Armaignac, D., Valle, C., Gidel, L., Mei, X., Zaidi, I., Gross, L., Williams, L., & Veledar, E. (2015). The Effect of Tele-ICU Innovation on Progressive Care Unit Patient Population. *Critical Care Medicine 43(12)*
- Armaignac, Donna (2018). Fulfilling the Promises of Health Information Technology: Expect to Maximize Positive Patient Care Outcomes, Advance Analytics and Innovate Research with Tele-Healthcare Application. *Contributory Article Invite: A special on Connected Health from Healthcare Tech Outlook*