1. SPECIFIC AIMS

The critical need to identify and treat psychiatric co-morbidities in individuals with epilepsy has been recently recognized (Kanner et al, 2010; Gilliam et al, 2006). The causes of medication-resistant or refractory epilepsy range from traumatic brain injury to genetic disorders. A large proportion of the approximately half million children and adults in the United States living with refractory epilepsy are more likely to have lower socioeconomic status, to be illiterate or marginally literate, and to live in medically underserved rural communities. While about 20% of Americans live in rural areas, only 9% of the nation’s physicians practice in these areas (Rossi, 2014). Furthermore, nearly all of these individuals require specialized medical care, and up to 70% of this group will require mental health care and access to social services. (FIG. 1). An independent community-based PHM coordination hub within the Epilepsy Foundation of North Central Illinois (EPFICIL) has been established in McHenry County, IL. It facilitates timely access to community social services, mobile health-linked subspecialty expertise and ‘on-demand’ internet-based patient education.

Such a community-based health information technology (IT) bridge for managing refractory epilepsy is critical for accommodating a markedly increased patient throughput following implementation of the Affordable Care Act.

The clinical implementation of this strategy hinges on accurately measuring psychosocial outcomes while proactively following specialized healthcare utilization patterns of the majority of individuals living within the community. Such coordination defines population health management. Validating success of such a strategy is critical to understanding its utility in providing cost-efficient comprehensive healthcare.

2. METHODS

The methodology combines the following 4 innovative components:

1. Mood disorders screening measures for depression (NDDI-E) and anxiety (GAD-7) in the rural EPFICIL clinic were compared with those seen in an urban-based setting (RUSH Epilepsy Center, Chicago, IL) (FIG. 2A). A custom-designed web-based electronic health record and relational database was created for accessing and tracking allocation of all geographically distant community-based resources and providers (FIG. 2B).

2. A HIPAA-compliant portable video-conferencing communication protocol and technology was deployed for remote access of specialists at Rush University Medical Center (RUMC) with patients and community-based healthcare providers (FIG. 3).

3. A community-based coordination hub facilitated the above components (FIG. 3).

3. RURAL TELEHEALTH

A 2-fold increase in NIDDI-E & GAD-7 only were found in rural patients compared with urban-based patients (p<0.05). Those rural patients symptomatic on the second visit (visits 2) were 3-times that of the urban cohort (42% v 13%).

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4. RESULTS

‘On-demand’ community psychosocial resources were successfully matched with all patients using our networking provider database. A significant increase in clinically significant mood disorders (NDDI-E & GAD-7) were seen in rural patients compared with urban-based patients identified at the RUSH Epilepsy Center (p< 0.05) (FIG 2).

5. CONCLUSIONS

• This mobile health IT-intensive population health-based outreach delivery model overcomes barriers preventing such coordinated care from being implemented in rural communities.

• The model significantly expands the geographic reach of a distant tertiary care medical center to an underserved region. Preliminary data suggest that an independent community-based coordination hub can efficiently maximize patient access to community psychosocial resources, medical expertise, and customized patient education.

• Next steps will include remote case management of both children and adults with refractory epilepsy due to causes from traumatic brain injury to genetic disorders with co-occurring mental health conditions. Mobile health will bridge the geographically distant emergency departments with RUMC. An expanded suite of quick assessment tools will be employed, such as: 1) the Child Depression Inventory, 2) Family Inventory Resources for Management tool, 3) a standardized survey or assessing perceptions of care and facilitation of referrals to community clinicians and group practices (CAHPS) (https://cahps.ahrq.gov, and 4) the Telehealth Patient Satisfaction Survey Instrument (http://www.uthaltheast.net).

• Mental health conditions without epilepsy must be included as a reference to understand the impact of epilepsy itself.

6. ACKNOWLEDGEMENTS

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7. REFERENCES


