JCMC-RWJBarnabas Health is a 350-bed regional medical center in Hudson County, NJ. Like most healthcare organizations, JCMC’s efforts to improve care coordination and efficiency were stymied by inefficient communications across their care continuum. Clinicians found it hard to locate and communicate with colleagues on patient-related matters, and many resorted to unsecured texting as a means of communication.

In February 2013, as a way to mitigate the risk of HIPAA violations due to unsecured texting, JCMC adopted Uniphy Health’s Practice Unite®, an encrypted, customizable mobile application that facilitates secure HIPAA compliant messaging. This application was tailored to address JCMC’s specific workflow issues and was supported with a deliberate program to drive adoption and usage.

In order to measure the system’s effects on clinical performance, user data resulting from detailed clinician interviews, designed by the CFO, were analyzed. One year after the app’s rollout, and based on the hospital’s experiences with the system, the administration identified several key areas for integration. The mobile app’s effects on clinical workflows, and the hospital’s subsequent choices of systems with which to integrate, are described below.

The JCMC Practice Unite Solution

The functionality of the secure mobile application was selected by the hospital to address the organization’s perceived mobile communications issues. These included clinician-to-clinician texting and image sharing, consult delivery, an on-call list, connections to the hospital’s concierge service, a hospital and physician telephone directory, news delivery and event management, urgent alerts, and others. Physician and other clinician onboarding was done in person, by phone, and by other standard means of communication.

Financial Effect & System Integration Evolution

Detailed interviews with physicians, designed and evaluated by the CFO, focused on clinical outcomes prior to and after introduction of the application. The application’s effects on clinical outcomes were based on forty-six clinician reports. The financial impact on each category was calculated by multiplying 1) the dollar value for each variable being measured by 2) the average effect per physician, with that number multiplied by 3) the number of physician users of the app in each category.

System integration occurred organically based on the hospital’s experience with, and expectations of, the application.
Resulting Efficiency and Financial Impact by Clinical Area

The clinical and financial impact of secure mobile communications on each of the five (5) clinical areas analyzed is presented below.

Observation Unit

Clinicians receive real-time clinical data via the app, and use it to coordinate care plans and discharge or admission decisions.

- 20% reduction in Observation Unit stays >24 hours
- Reduced inpatient care delays by 1.25-hours/physician/24 hrs.
- Facilitated 20 discharge communications with primary care physicians/day

The resultant 20% reduction in Observation Unit patient time translates to savings of 4.8 hours/patient. At $50/hour (average nursing compensation) this saves $240/case. The annual savings with 3,000 observation cases annually is $720,000.

Employed Surgeons

Surgical teams receive consults and critical lab in real-time, and coordinate discharges and communications with referring physicians through the app.

- 20% reduction in patient length of stay attributed to facilitated discharge communications
- Reduced inpatient communications delays between surgeons and other physicians/care team members by an average of 5.5-hours/surgeon/24 hrs.
- Reduced response to consult time by an average of one hour/case
- Facilitated 10 discharge communications to primary care physicians/day

A 20% reduction in length of stay for surgical cases, which have an average LOS of 4 days, saves .8 days per case. At a cost of $350/patient day, these savings approximate $280/case. 1000 cases performed annually results in annual savings of $280,000.
**Private Practice Internal Medicine & Family Practice Physicians**

Physicians find and communicate with hospital network consultants through the app, and rely on it to facilitate care and discharge planning with care teams and care coordinators.

- Reduced inpatient care delays by 1.25 hours/physician/day
- Reduced referral leakage by 1 patient/month/physician

Leakage reduction resulted in an increase of 7.5 cases per month. At an average of $10,000 reimbursement per case, this increase generates an additional $75,000 of new net revenue per month or $900,000 of new net revenue per year (revenue before incremental expenses).

**Private Practice Surgeons**

Surgeons make admission decisions by consulting with ED physicians through the app, receive real-time clinical data, coordinate discharges with care teams, and locate medical specialists for in-network referrals.

- 10% of patients discharged at least one (1) day earlier/physician
- 20% reduction in ED patient waiting times leading up to discharge or admission
- Reduced hospital referral leakage by 2 cases/month/physician

The average LOS for this category is 4.5 days. A LOS reduction of one day for 10% of cases is equivalent to a .1 day LOS reduction on average. This was valued at an average $35/case or $1,225 for 35 private practice surgeons’ cases. The average surgeon performed 100 procedures per year, resulting in an annual savings of approximately $122,500.

**Resident Physicians**

Residents receive real-time critical lab data, communicate with nurses, and coordinate consults and discharge plans with attending physicians.

- Specialist response time to consult requests in 50% of all patients was reduced from 1-2 days (24-48 hrs.) to 30 minutes
- 25% of patients’ length of stay reduced by one (1) day
- 25% of patients transferred out of CCU at least 1 day earlier

While the potential savings in the resident physician category were potentially significant, these were not valued due to an inability to accurately differentiate resident-managed cases from the other areas described above.
Summary

The success of a hospital’s mobile communications system depends on the number of physicians who adopt and use it, the system’s ability to integrate with the EHR and other clinical reporting systems, and its flexibility to adapt and evolve with future clinical and non-clinical needs. Having these capabilities results in a significant return on investment, greater physician satisfaction and clinical efficiency, and a more unified and manageable security environment.

With 450 clinicians utilizing Practice Unite as part of their daily work, JCMC is expanding its use. Initiatives include integration of the app with other clinical systems and piloting its use to help reduce 90-day readmissions.

System Integration and Expanded Functionality

Improvements in clinical efficiency, and a positive financial impact, prompted the hospital to integrate their mobile app with other clinical and non-clinical systems. Administrators have chosen to integrate with the following systems, in the following general order:

1. Consult delivery from CPOE
2. Critical lab delivery
3. Radiology report delivery
4. Pathology report delivery
5. VOIP communications to hospital phones
6. Pager integration and/or replacement
7. Preventable readmission initiatives
8. Bed turnover management
9. Patient satisfaction management

The delivery of critical labs, consultation requests, and radiology reports tops the list of preferred integrations for both physician and administrators.

90-Day Readmission Pilot

Administrators responsible for preventable readmission initiatives identify securemobile communications as a means to extend the reach of care coordinators and care teams into the post-discharge environment, specifically to connect nursing home and home health personnel with hospital post-discharge managers and treating clinicians. This results in real-time sharing of key patient information in the form of patient notes, images and text communications, and has resulted in:

- Previously unreachable physicians who now respond in minutes
- Higher levels of outpatient management prior to ED evaluation for readmission

RESULTS

- More than $2 million in calculated savings (initial 9 months)
- Reduced average communications response time by 85%
- Reduced LOS in observation unit from 26 to 22 hours (year 1) and 16 hours (year 2)
- Inpatient communication delays between surgeons and other care team members reduced by 5.5 hours per day
- Response to consults from residents to private practice physicians decreased by 1-2 days per case for 50% of cases
- Referral leakage reduced by 1 patient per physician per month