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Title

Part 1: Hotspotting in the UCSD Student-Run Free Clinic: identifying patients for enrollment in Complex Care Service case management ; Part 2: Hotspotting applied: creating a model for the provision of case managed care for complex patients identifie...

Permalink

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Publication Date

2018

PART 1 |Hotspotting in the UCSD Student-Run Free Clinic: Identifying patients for enrollment in Complex Care Service case management

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ABSTRACT/OBJECTIVE

The University of California, San Diego (UCSD) Student-Run Free Clinic Project (SRFCP) serves a subset of complex patients who may benefit from additional levels of care coordination and support beyond the scope of what is currently provided in the clinic. The Complex Care Service (CCS) created a patient-centered care delivery system featuring medical students as case managers to address the needs of this population. A student-run elective (FPM 275) that developed from the CCS is seeking to enroll complex patients that would benefit from coordinated case managed care. Complex patients must first be identified. This project examines current practices of patient identification through 'hotspotting', finding that most selection is through subjective physician referrals or objective emergency medical services (EMS) utilization data. It then uses these heuristics as a guide to systematically rank free clinic patients by complexity and healthcare utilization, finding that SRFCP patients utilize EMS appropriately and that patients at risk for primary care breakdown are those with a greater degree of complexity. Finally, it uses these findings along with SRFCP physicians' subjective referrals to generate a list of patients and to develop an appropriate model for future patient enrollment in case managed care through FPM 275 at the SRFCP.

BACKGROUND/SIGNIFICANCE

Chronic disease management represents a major challenge for healthcare. Most medical emergency departments (EDs) serve a relatively small number of frequent users who account for a disproportionately large number of ED visits[1]. These 'super-users,' who typically suffer from multimorbid chronic diseases, may benefit from enhanced services due to their increased vulnerability and psychosocial barriers to care[2,3]. The current pattern of frequent ED use within an already vulnerable patient population results in suboptimal care that is fragmented, limited in its ability to meet patients' complex needs, and burdened by the high costs of excess emergency medical services (EMS) utilization[3,4]. The prevalence and persistence of frequent ED use has increased interest in interventions that reduce overuse of EMS by providing 'super-users' with more appropriate and consistent medical and social services to manage chronic conditions.

One intervention that is gaining popularity is hotspotting. Hotspotting was developed for use in healthcare by family physician Jeffrey Brenner and popularized by Atul Gawande's article *The Hot Spotters*[5]. This model aims to reduce inappropriate EMS utilization and improve health outcomes by identifying and investing more time and resources into the care of the most high-risk patients. Hotspotting is also gaining traction in San Diego County through the successes of Project 25—a housing first model that provides intensive case managed care to the of sickest patients[6,7]—and through both UCSD and the Multicultural Health Foundation Hotspotting Collaboration Patient Health Improvement Initiative[8]. Under the hotspotting

model, care coordination has emerged as an important care delivery model for complex and high-risk patients. Case managers use an interdisciplinary approach to address patients' biopsychosocial needs and help patients navigate the healthcare system; methods include calling patients between discrete office visits, monitoring the status of testing or referrals, and integrating the care of subspecialists and allied health services[9,10]. The rapport and continuity possible through case managed care can also serve as a platform from which health literacy, self-management skills, and health-related self-efficacy can be developed in order to activate patients to navigate the healthcare system appropriately[11].

The UCSD SRFCP was established in 1997 to provide accessible, quality healthcare for underserved patients in San Diego. Since that time, the free clinic has served an important role in the health of a diverse community of patients who have no other access to consistent primary care. Within this population, there is a subset of patients who face the additional burden of multimorbid chronic disease, limited health literacy, and psychosocial barriers to health. Due to their complex conditions and high healthcare utilization, these patients may benefit from additional levels of care coordination and support beyond the scope of what is currently provided in the clinic. In order to provide coordinated care for these complicated SRFCP patients, a small pilot clinical service, the Complex Care Service (CCS), was created in the fall of 2014. The CCS paired medical students with a single patient to provide longitudinal care over the course of the year. It trained students in care coordination, and equipped them to facilitate health behavior change through health coaching and motivational interviewing. Patient and medical student satisfaction with the pilot program was high[12].

As a group of students and I worked to expand case-managed care at the SRFCP through the transformation of the CCS into a student run elective winter of 2016, additional patient candidates needed to be identified for enrollment[13]. This project examines the current 'hotspotting' models for 'super-user' identification, uses those heuristics as a guide to systematically rank free clinic patients by complexity and healthcare resource utilization, works with SRFCP physicians to develop an appropriate hotspotting model with that data, and generates a list of patients available on the SRFCP ishare account to be enrolled in case-managed care through FPM 275.

CURRENT PRACTICES IN HOTSPOTTING

To gain a better understanding of hotspotting efforts at the national level, I participated in the Camden Coalition Hot-Spotting Conference as a member of the UCSD hot-spotting mini-grant team. On the local level, I attended case management meetings for Project 25 and the Patient Health Improvement Initiative (PHII).

<u>The UCSD Camden Coalition hotspotting mini-grant team</u> is one of twenty national inter-professional student teams collaborating with the Camden Coalition to identify and engage high-utilizing patients within their own communities. I had the opportunity to participate in the UCSD team, which included medical and pharmacy students, social workers, community healthcare workers, nurses, physicians, and EMS staff members. We worked closely with the San Diego EMS Resource Access Program (RAP)—a paramedic-based surveillance and case management system that intercepts high EMS users—to both identify and provide care for our patients.

The UCSD Camden hotspotting team identified patients via physician referrals and analysis of EMS utilization using the RAP Street Sense database. The RAP database tracks ambulance rides, ED visits, and time spent in county jails, thereby enabling objective analysis of EMS utilization while also providing a means to contact potential patients. During the six-month program, our mini-grant team enrolled four patients based on their classification as a high resource-utilizing and biopsychosocially complex patients. High resource-utilization was defined as six or more ED visits and/or three hospital admissions in the preceding six months. Biopsychosocial complexity was defined as the presence of at least two comorbid diseases (excluding cancer and alcoholism as a primary diagnosis) and a socioeconomic barrier to healthcare.

Our team, with the help of RAP, successfully connected our four patients to social and medical resources, thereby decreasing burden of disease symptoms and number of ED visits during the six-month intervention period[14]. We further had the opportunity to present our work at the Camden Coalition Hotspotting Conference in New Jersey to discuss strengths and weaknesses of our interventions and generate ideas moving the project forward. The following year, medical students from UCSD were rewarded a continuation grant from the Camden Coalition and the hotspotting initiative expanded to more patients in collaboration with RAP. When RAP funding was put on hold, the inter-disciplinary UCSD hotspotting team referred eligible patients to the SRFCP where they were enrolled in case-managed care with medical students. The UCSD hotspotting team's initiatives continued under the purview of the SRFCP.

Project 25 is a pilot program spearheaded by St. Vincent de Paul alongside United Way and the Home Again initiative. It seeks to improve care for chronically homeless individuals who utilize the largest percentage of EMS and law enforcement services within San Diego county.

The selection process for enrollment in Project 25 began with classification as chronically homeless, meaning that individuals were either continuously homeless for one year or without shelter at least four times within a three-year period. Resource utilization was defined as use of two or more of the following services: local hospitals, jails, EMS, and county behavioral health services. *The overlay of chronic homelessness and frequent resource utilization yielded a list of 71 individuals who were then offered participation in Project 25 on a rolling basis, starting with those requiring the greatest resource expenditures.* A total of 36 participants were enrolled. These individuals had an average 21 ambulance rides, 41 ER visits, 10 hospital admissions, 45 hospital days, and an average cost of $120,841 per person in the year proceeding enrollment[7].

Project 25 intervention follows a 'Housing First' model, which provides permanent housing followed closely by interdisciplinary intensive case managed care. Care includes substance abuse counseling, harm reduction, mental and physical health services, education, and other social support resources. In the first year of Project 25, there was a remarkable 56% decline in number of hospitalizations, 58% decrease in days spent in the hospital, 62% drop in ambulance rides, 66% reduction in emergency room visits, and 63% reduction of costs among those in the initial cohort[6,7].

Patient Health Improvement Initiative (PHII), spearheaded by Dr. Rodney Hood in collaboration with the MultiCultural Primary Care Medical Group and San Diego Organizing Project, is a

hotspotting program that aims to reduce healthcare expenditures and improve health for the chronically ill in San Diego. The project follows a case managed care model with teams imbedded in the community. A social worker and nurse visit patients in their homes, facilitate setting and tracking progress toward health goals, attend appointments with patients, and empower patients to understand diagnoses and medications. Patients graduate from the program after 12 months, but have continued follow-up for six months to monitor confidence with healthcare navigation.

The majority of patients enrolled in PHII were referred to the program by the Health Network or the Independent Physicians Association as complex patients who would benefit from case-managed care. PHII selection criteria also includes having at least two ED visits and/or hospitalizations in the last six months, at least two comorbid disease, and multiple medications. A total of 167 patients were enrolled in the three-year study[8].

The first 117 patients enrolled in the PHII study demonstrated health stabilization, reducing ER visits by 31%, hospital admissions by 22%, and the length of hospital stay by 49% as compared to the pre-enrollment period[8].

Nationally and locally, patient identification by hotspotting is generally initiated on a referral basis. Patient known by providers or insurance companies to be complex patients or to utilize EMS frequently are referred for case managed care. Patient complexity is subjectively determined by biopsychosocial factors including disease comorbidity and socioeconomic barriers to health. High EMS utilization for these complex patients is objectively confirmed by number of ED encounters. *Both patient complexity and EMS utilization will be assessed within the SRFCP patient population as a means of hotspotting in this study.*

METHODS

The UCSD electronic health record, Epic, was queried retrospectively to analyze patient diagnoses and healthcare utilization from the time of universal Epic use at the SRFCP to the initiation of this study: January 2014 to August 2015. Data for this 20 month study period was evaluated at each of the four clinical site. Patients known to the SRFCP without an ambulatory care encounter during the study period were excluded. Deceased patients were excluded.

Ambulatory care encounters were defined as an encounter at one of four SRFCP sites. Encounters were stratified by full care, medication refill, and telephone subtypes. Medication refill encounters were excluded, as these were not problem-based appointments, but rather obligatory point-of-care encounters for medication refill at the SRFCP dispensary pharmacy. Telephone encounters were likewise excluded.

EMS utilization was defined as a UCSD ED encounter. Hospital admission following presentation to the ED was a secondary measure. ED encounters at other healthcare systems in San Diego could not be accessed. Patients who presented to the UCSD ED at least one standard deviation above the mean of all ED users within the SRFCP were identified. A hospital admission rate following presentation to the UCSD ED was calculated for EMS 'super-users'.

Patient complexity was determined using the Charlson Comorbidity Index (CCI). The CCI is based on ICD-9 diagnostic codes in a patient's medical record and is calculated by assigning point values to various comorbid conditions: diabetes with or without complications, liver disease, chronic pulmonary disease, myocardial infarction, cerebrovascular disease, congestive

heart failure, peripheral vascular disease, connective tissue disease, dementia, peptic ulcer disease, metastatic and non-metastatic solid tumor within the last 5 years, malignant lymphoma, leukemia, renal disease, hemiplegia, and AIDS (Table 1). The sum total of the point values for each comorbidity yielded an overall disease-specific CCI score. This score was adjusted for age with an additional point for each decade of life that a patient is beyond 50 years of age. High overall age-adjusted scores (≥5) indicate a high burden of chronic disease comorbidity, or medical complexity. The 95th percentile of SRFCP patients based on age-adjusted CCI complexity were identified. These were then stratified by base disease-specific CCI scores.

1 CCI POINT	2 CCI POINTS	3 CCI POINTS	6 CCI POINTS
Diabetes without end organ damage	Diabetes with end organ damage	Moderate-severe liver disease	AIDS
Mild liver disease	Non-metastatic solid tumor		Metastatic solid tumor
Chronic pulmonary disease	Malignant lymphoma		
Myocardial infarction	Leukemia		
Cerebrovascular disease	Moderate-severe renal disease		
Congestive heart failure	Hemiplegia		
Peripheral vascular disease			
Connective tissue disease			
Dementia			
Peptic ulcer disease			

Table 1. Charlson Comorbidity Index Disease-Specific Complexity Weights
CCI is calculated by adding disease specific point values together for a total disease-specific score. This base disease-specific score can then be age-adjusted by one point for each decade of life beyond 50 years of age (i.e. an additional two points for patients ages 60-69).

Pearson correlations, stratified by complexity based on age-adjusted CCI, were used to identify relationships between SRFCP encounters and UCSD ED encounters, SRFCP encounters and hospital admissions, and UCSD ED encounters and subsequent hospital admissions for all patients as well as the patient subgroup with at least one ED visit during the study period. Numbers of ambulatory care encounters and UCSD ED encounters as compared with age-adjusted CCI was also evaluated for all patients, the subgroup of patients with at least one ED encounters, and the subgroup of patients with no ED encounters.

Complex patients and 'super-users' were presented to SRFCP physicians. Physician subjective referral alongside objective healthcare utilization data were used to identify patients at risk for primary care breakdown. This information permitted compilation of a list of patients available on the SRFCP ishare account who may be enrolled in case managed care with medical students in FPM 275.

RESULTS

A total of 765 SRFCP patients had at least one encounter documented on Epic. Of these, 687 patients had at least one SRFCP encounter in the 20-month study period, and were considered 'active patients'. One patient had passed away during the study period and was excluded from the analysis. The remaining 686 patients were evaluated in this analysis.

EMS utilization data indicated that 69 SRFCP patients, or 10% of the active patients, had at least one UCSD ED encounter during the study period. Within this cohort, the average number of ED encounters in the study period was 2.1, with a standard deviation of 2.7 visits. Thirty-eight patients had one ED encounter, 17 had two ED encounters, eight had three ED encounters, and four had four ED encounters. Four 'super-user' patients presented to the ED greater than one standard deviation away from the mean number of UCSD ED encounters (>4.8 ED encounters). Two of these 'super-users' presented to the ED greater than two standard deviations away from the mean (>7.5 ED encounters) (Figure 1).
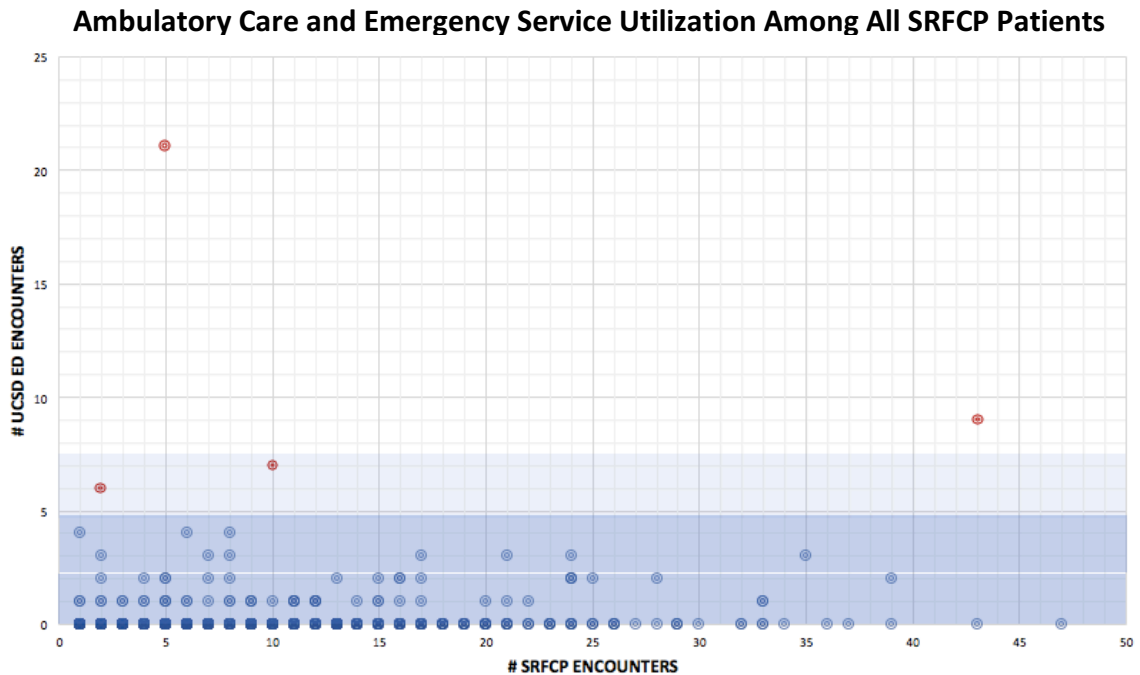

Figure 1. SRFCP Patient Healthcare Utilization
All patient encounters during the study period are represented as a comparison of SRFCP versus UCSD ED encounters. Average number of UCSD ED encounters (2.1) is represented by the white trend line. Standard deviations from the mean (2.7) are represented by blue shading. Four patients presenting to the ED at least one standard deviation away from the mean are highlighted in red. Patient A had five SRFCP encounters and 21 UCSD ED encounters. Patient B had 43 SRFCP encounters and nine UCSD ED encounters. Patient C had ten SRFCP encounters and seven UCSD ED encounters. Patient D had two SRFCP encounters and six UCSD ED encounters

Of the patients with at least one UCSD ED encounter during the study period, the average number of admissions was 0.52, or an average hospital admission rate of 25% after presentation to the ED. Of the four 'super-users', patient A had one admission in 21 ED encounters (5% admission rate), patient B had four admissions in nine ED encounters (44% admission rate), patient C had three admissions in seven ED encounters (43% admission rate), and patient D had one admission in six ED encounters (17% admission rate) (Table 2).

Patient	UCSD ED Encounters	Admissions	Admission Rate	SRFCP Encounters	Notes
A	21**	1	5%	5	Transitioning out of SRFCP care due to ACA eligibility
B	9**	4	44%	43	CCI diagnoses include diabetes with complications and moderate chronic kidney disease
C	7*	3	43%	10	CCI diagnoses include DM complicated by osteomyelitis with recurrent bilateral stump amputations
D	6*	1	17%	2	Transitioning out of SRFCP care due to ACA eligibility

*greater than one standard deviation from the mean
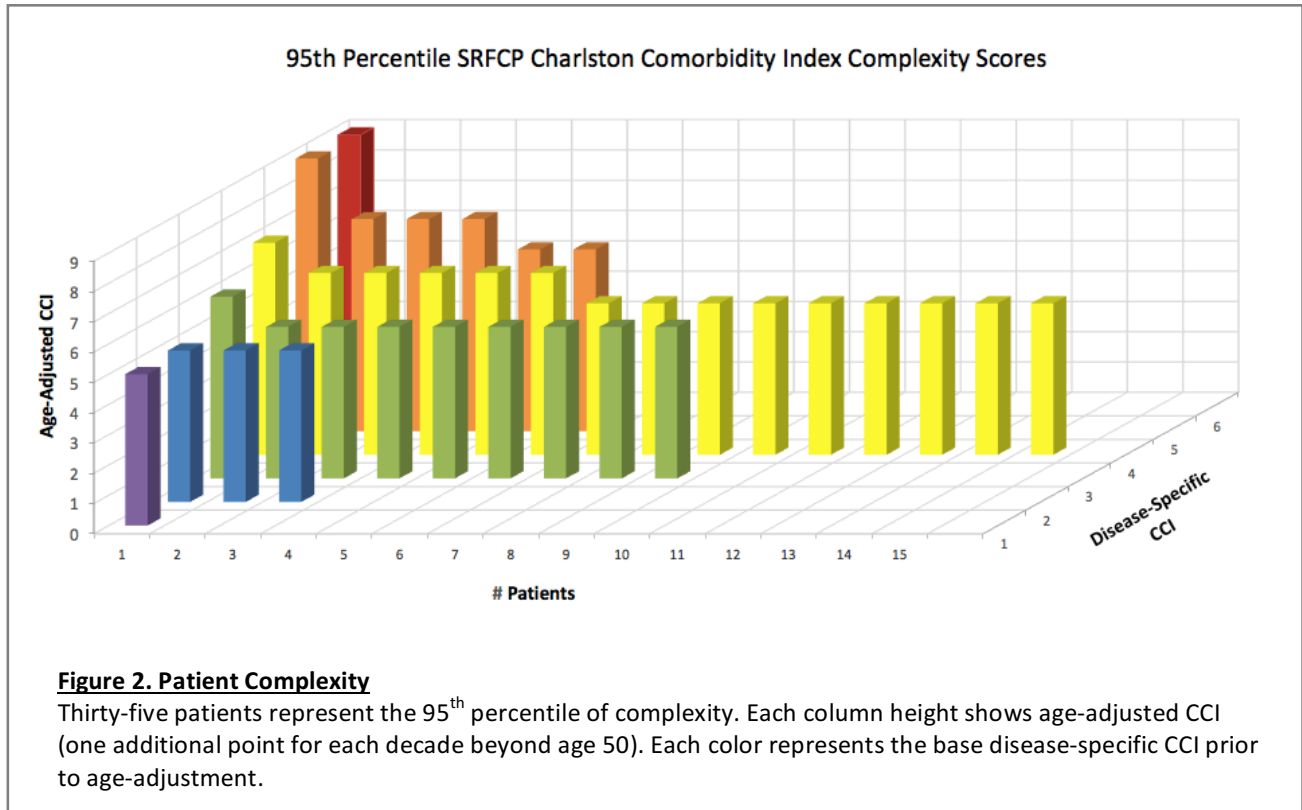**greater than two standard deviations from the mean

Table 2. Health Service Utilization
Four patients were identified as UCSD ED 'super-users.' Two patients, denoted A and D, are no longer eligible for care at the SRFCP, and accordingly have few SRFCP encounters than patients B and C. Hospital admission rate is lower than average for patients A and D but higher than average for patients B and C.

Ambulatory care encounter data showed that during the 20-month study period, the 686 active SRFCP patients had an average 9.2 ambulatory care encounters (the equivalent of one encounter every two months). Of the cohort who also presented to the ED, the average number of SRFCP encounters was 12.6. The maximum number of clinic encounters for a single patient during the study period was 47 (the equivalent of one visit every two weeks). The minimum number of encounters during the study period was one. The patients identified as ED 'super-users' had a variable number of SRFCP encounters, ranging from two to 43. Patients A and D are no longer eligible for care at the SRFCP and accordingly have fewer SRFCP encounter than patients B and C (Table 2).

Complexity ratings for all SRFCP patients yielded two patients with an age-adjusted CCI of 9, zero patients with an age-adjusted CCI of 8, four patients with an age-adjusted CCI of 7, eight patients with an age-adjusted CCI of 6, and twenty-one patients with an age-adjusted CCI

of 5. The remaining 651 patients had an age-adjusted CCI score of 4 or less. On average, CCI score was age-adjusted by +2.5 points. The 35 patients who make up the top 5% of SRFCP patients based on age-adjusted CCI disease comorbidity burden are represented in Figure 2. Of note, 22 of these patients were age-adjusted from a base disease-specific CCI score of four or greater. (Figure 2)

Figure 2. Patient Complexity
Thirty-five patients represent the 95th percentile of complexity. Each column height shows age-adjusted CCI (one additional point for each decade beyond age 50). Each color represents the base disease-specific CCI prior to age-adjustment.

Pearson correlations showed that among all SRFCP patients (n=686) there is no relationship between number of SRFCP encounters and UCSD ED encounters (r=0.099, p=0.01). Stratification by complexity based on age-adjusted CCI revealed an emerging positive correlation between SRFCP encounters and UCSD ED encounters (i.e. for more complex patients, as number of SRFCP encounters increased, number of UCSD ED encounters also increased). For all patients, there was also a positive relationship between UCSD ED encounters and subsequent hospital admissions (r=0.459, p=0.00). This relationship grew stronger as complexity increased. (Table 3)

For patients with at least one ED visit during the study period (n=69), there is no correlation between number of SRFCP encounters and UCSD ED encounters (r=0.028, p=0.76). However, stratification by complexity based on age-adjusted CCI in this sub-group revealed an emerging relationship between number of SRFCP encounters and UCSD ED encounters. Of note, these relationships were not statistically significant. There is a positive correlation between ED visits and subsequent hospitalizations among the patients with at least one UCSD ED visit (r=0.362, p=0.002); however, stratification by age-adjusted CCI showed that this was only statistically significant for more complex patients.

	N	SRFCP-ED	(p)	SRRCP-Admit	(p)	ED-Admit	(p)
All Patients	**686**	**0.099***	**(0.01)**	**0.206***	**(0.00)**	**0.459***	**(0.00)**
CCI 0	250	0.290	(0.65)	0.930	(0.14)	0.329*	(0.00)
CCI 1	160	-0.018	(0.82)	0.005	(0.95)	0.229*	(0.004)
CCI 2	125	0.070	(0.44)	0.017	(0.85)	0.850*	(0.00)
CCI 3	73	0.214*	(0.07)	0.051	(0.66)	0.645*	(0.00)
CCI 4	43	-0.089	(0.57)	0.533*	(0.00)	0.205	(0.19)
CCI ≥ 5	35	0.637*	(0.00)	0.620*	(0.00)	0.897*	(0.00)

	N	SRFCP-ED	(p)	SRFCP-Admit	(p)	ED-Admit	(p)
ED Utilizers	**69**	**0.028**	**(0.76)**	**0.27***	**(0.03)**	**0.362***	**(0.002)**
CCI 0	18	-0.374	(0.13)	0.158	(0.53)	-0.076	(0.76)
CCI 1	12	-0.327	(0.30)	-0.096	(0.77)	0.190	(0.55)
CCI 2	16	0.057	(0.83)	-0.107	(0.69)	0.812	(0.00)
CCI 3	11	0.451	(0.16)	-0.079	(0.82)	0.608	(0.047)
CCI 4	4	-0.211	(0.79)	-0.211	(0.79)	1.000*	(0.00)
CCI ≥ 5	8	0.794	(0.19)	0.817*	(0.01)	0.858*	(0.006)

* statistically significant (P<0.05)

Table 3. SRFCP and UCSD ED Utilization Patterns:
Pearson correlations between ambulatory care encounters, UCSD ED encounters, and subsequent hospital admission amongst all patients and the sub-group with at least one UCSD ED encounter, stratified by age-adjusted CCI show no correlation between number of SRFCP encounters and UCSD ED encounters.

The emerging correlation between patient complexity based on age-adjusted CCI and healthcare utilization seen in Pearson correlations stratified by CCI was evaluated further. For all SRFCP patients (n=686), there was positive relationship between patient complexity based on age-adjusted CCI and SRFCP encounters (r=0.899, p=0.01) (Figure 3.A). There was no

relationship between patient complexity and number of UCSD ED encounters (r=0.215, p=0.517) (Figure 3.B).

For the patient cohort with at least one UCSD ED encounter (n=69), there was a positive relationship between patient complexity based on age-adjusted CCI and SRFCP encounters (r=0.747 p=0.05) (Figure 3.C). There was a no relationship between patient complexity and number of UCSD ED encounters (r =0.302, p=0.511) (Figure 3.D). Of note, the correlations for complexity and healthcare utilization among the patient cohort with at least one UCSD ED encounter were not statistically significant.

For the patient cohort with no UCSD ED encounters in the study period (n=599), there was a positive relationship between patient complexity based on age-adjusted CCI and SRFCP encounters (r=0.908, p=0.001) (Figure 3.E).
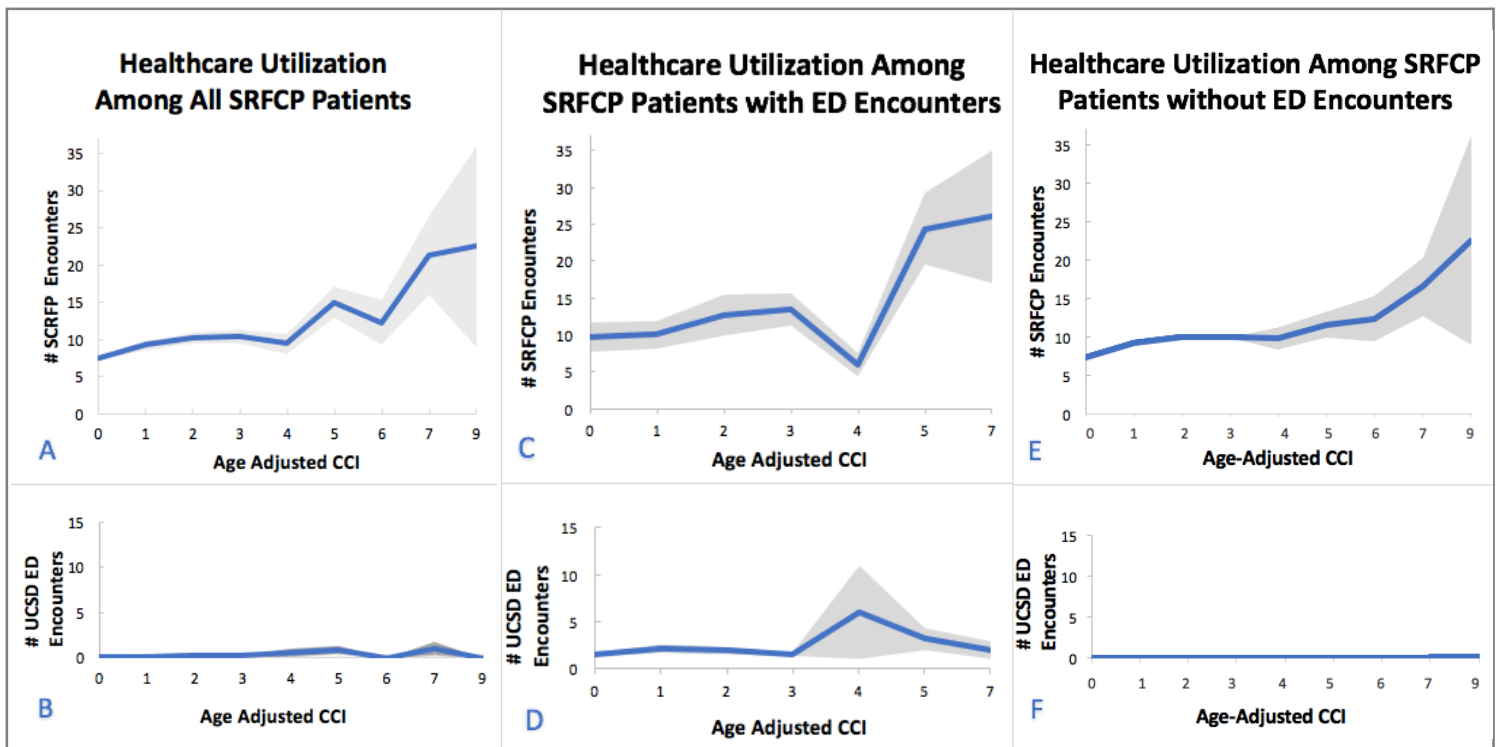

Figure 3. Healthcare service utilization trends with increasing patient complexity
Panels A and B represent SRFCP encounters and UCSD encounters with standard error for all SRFCP patients, respectively. Panels C and D represent SRFCP encounters and UCSD encounters with standard error, respectively, for the patient cohort with at least one UCSD ED encounter. Panels E and F represent SRFCP encounters and UCSD encounters with standard error, respectively, for patients without UCSD ED encounters. Each patient grouping shows a positive correlation between patient complexity and number of SRFCP encounter. There is no relationship between patient complexity and number of UCSD ED encounters in any group.

DISCUSSION

In the greater San Diego area, hotspotting is generally performed on a referral basis. Patients who are subjectively deemed biopsychosocially complex or are clear EMS 'super-user' are recommended for case managed care. High resource utilization is largely based on number of ED visits, with two to six ED encounters within a six month period serving as a common marker for inappropriate EMS use. More broadly, inappropriate EMS utilization can be defined as an ED visit for a medical condition better addressed in the ambulatory care setting. Patients who frequently utilize EMS are considered high-risk patients for the breakdown of primary care services[15,16]. Indeed, EMS utilization by chronically ill or medically complex patients for avoidable ambulatory care sensitive conditions (ACSCs) is an important sentinel event signifying breakdown of primary care access and care coordination[15].

In cases where access to primary care is available, a patient's risk of primary care breakdown can be correlated to that patient's medical complexity[10]. The more medically complex a patient is, the more important continuity and coordination of care are; such medically complex patients will likely benefit most from case managed care[10,15].

Base on EMS utilization, four SRFCP patients emerged as EMS 'super-users' during the study period. Of note, two of the four patients (patients A and D) are transitioning out of the SRFCP as they are no longer eligible for care given their access to insurance under the Affordable Care Act. Evaluation of the remaining two patients' ED encounter history revealed overall appropriate use of EMS:

> **Patient B** is a medically complex patient with a history of diabetes with complications, and moderate chronic kidney disease. This patient did not have ED encounters for ACSCs, but rather presented to the ED after ambulatory care recommendations for a higher level of care for acute problems, including the evaluation of a subdural hematoma.

> **Patient C** has a history of diabetes complicated by osteomyelitis with recurrent bilateral stump amputations. This patient's ED encounters were associated with ambulatory care recommendations for higher levels of care for imaging and amputation. These imaging studies would ordinarily be facilitated in the ambulatory setting, but limited resources available through the SRFCP necessitated an ED encounter for imaging. Of note, patient C was enrolled in the pilot CCS on the basis of immense social barriers to care; though beyond the scope of this study, patient C anecdotally had fewer ED encounters after enrollment in the pilot group.

The more appropriate ED utilization of these two SRFCP 'super-users' is further reflected in their high hospital admission rate (>40%) as compared to the two ED 'super-users' transitioning out of the SRFCP (patients A and D) who had admission rates of 5% and 17%, respectively.

When using the number of UCSD ED encounters as a sentinel marker, there was no apparent breakdown of primary care for ACSCs among patients eligible for care at the SRFCP. This suggests that ED encounter data may not be the best model to select patients for case managed care. The positive correlations between SRFCP encounters and ED encounters that emerged through the stratification by patient complexity may represent ambulatory care referral for higher level of care for more complex patients (Table 3). Indeed, one would expect a negative correlation between SRFCP encounters and UCSD ED encounters if there were a breakdown of

primary care. The majority of SRFCP patients appeared to preferentially present to SRFCP to meet their complex care needs, as is demonstrated by the positive correlation between patient complexity and frequency of ambulatory care visits (Figure 3).

The increased frequency of ambulatory care visits for complex patients is an area that can be capitalized upon at the SRFCP to improve patient continuity of care and health outcomes. The current care model at the SRFCP is such that a patient is seen by a different medical student at each clinical visit. This not only makes care disjointed, but requires that much of the clinical time at each visit be devoted to chart review by a medical student new to the patient. Fostering continuity with one medical student provider may improve chronic disease management by allowing more time for patient-provider interactions, thereby enabling a milieu of health behavior change through motivational interviewing; this may make each SRFCP encounter more fruitful[11]. The promotion of provider continuity and the case managed care that it would allow will be most beneficial in improving health outcomes for the most complex SRFCP patients[10,15].

Patient complexity was assessed as a possible marker for patient enrollment in case managed care. As seen in figure 1, 35 patients were identified to fall within the 95th percentile of complexity, based on age-adjusted CCI of five or greater. Two patients from this cohort were previously enrolled in the pilot CCS group (the first with a disease-specific CCI of 6, age-adjusted to 9; the second with a disease-specific CCI of 4, age adjusted to 5). SRFCP physicians familiar with the remaining 33 complex patients were approached for subjective referrals for case management. Physicians were also given the opportunity to refer patients not included in this cohort. This CCI-blinded referral process resulted in the preferentially selection of patients with both a high disease-specific CCI (≥4) and a high age-adjusted CCI (≥5). Of note, patient B, who was both a 'super-user' and complex patient based on CCI (disease specific CCI of 4, age-adjusted to 5) was referred for enrollment, suggesting that complexity may also be inclusive of EMS utilization within the SRFCP setting.

The preferential selection of highly complex patients and the apparent integrity of primary care access for ACSCs at the SRFCP prompted a hotspotting model based on patient disease-specific and age-adjusted CCI rather than EMS utilization. A list of patients recommended for ongoing enrollment into case managed care has been added to the SRFCP ishare. In order to provide a means to screen patient complexity in the future, two additional documents were added to the ishare. First, a spreadsheet of all current SRFCP patients and the presence or absence of CCI eligible conditions; here patient CCI diagnoses can be updated to output a CCI score. Second, a CCI calculator was also uploaded for quick tabulation of complexity ratings.

ASSUMPTIONS/LIMITATIONS

This study assumes that all patient diagnoses are documented in Epic. Thus, disease-specified CCI scores may represent a lower bound for complexity if all CCI compatible diagnoses were not included in the calculated scores. However, even if these patients had lower than expected CCI scores, they would likely have been identified through the subjective referral process.

The emergency services utilization patterns observed in this study only reflect UCSD health system ED utilization, as data is unavailable from other health systems. This study proposes that UCSD ED utilization is a marker for utilization across all San Diego health systems

based on two assumptions: 1) SRFCP provider-lead referrals for a higher level of care preferentially refer patients to UCSD Hillcrest; this study thereby captures the majority of SRFCP patient ED encounters; 2) self-referral to an ED is likely proportional across healthcare systems, so though this study may represent a lower bound for ED encounters, it is proportional to general utilization patterns across systems. Nevertheless, it is likely that this study did not capture all EMS utilization data and it is possible that it has not identified 'super-users' of non-UCSD healthcare system. If so, this study may not have identified the presence of primary care breakdown for a select group of patients based solely on ED utilization. This highlights the advantage of use complexity ratings and a referral basis as a means to detect patients at risk for primary care breakdown, as patients known by SRFCP physicians to have had multiple ED encounters, even within other healthcare systems, will not be overlooked.

FUTURE WORK

The aim of this project was to identify 'super-users' or patients at risk for primary care breakdown in order to provide case managed care with an interdisciplinary team. Five patients identified through this study have now joined the three patients originally enrolled in pilot CCS for case managed care through FPM 275. My work transforming the CCS into this student run elective is described in 'Part 2' of this project. As the elective expands, future work will include extending case managed care to patients with high chronic disease burden who are at high risk for EMS over-utilization for ACSCs should there be a breakdown in primary care. Using the hotspotting model optimized through this project, future patients may be selected based on CCI and subsequently enrolled in case managed care on a rolling basis with students in FPM 275.

As noted in the 'Part 2', patient health subjectively improved through case management. Future work may include objective evaluation of patient outcomes and healthcare utilization, if possible across all health systems, to assess the efficacy of hotspotting and case managed care within the SRFCP.

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PART 2 | Hotspotting Applied: Creating a model for the provision of case managed care for complex patients identified at the Student Run Free Clinic Project

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Project development collaborators: Griffin Gorsky, Neha Chandra, Payal Desai, Sydney Thayer, Silvia Fonseca, Adeola Martins, Dr. John Adams, Dr. Ellen Beck

ABSTRACT/OBJECTIVE

The University of California, San Diego (UCSD) Student-Run Free Clinic Project (SRFCP) serves a subset of patients who face the burden of multimorbid chronic disease, limited health literacy, and psychosocial barriers to health. Complex patients typically require high levels of healthcare resources and may benefit from additional levels of care coordination and support beyond the scope of what is currently provided at the SRFCP. The Complex Care Service (CCS) was created to address the needs of this population through a patient-centered care delivery system featuring medical students as case-managers. The primary goals of this service were two-fold: to improve outcomes for complex patients by developing their health literacy, self-management skills, and health related self-efficacy; and to develop medical students' ability to facilitate health behavior change and to provide collaborative case managed care to SRFCP patients. *This project documents the creation of the CCS and its transformation into a student-run elective with the expansion of the service, the development and refinement of clinical tools, and the formalization of medical student training in motivational interviewing and health behavior change as a means to sustainably continue case managed care for complex patients identified at the SRFCP.*

BACKGROUND/SIGNIFICANCE

Why case managed care?

Chronic disease management represents a major challenge for healthcare. The growing population of Americans who suffer from multimorbid chronic diseases may benefit from enhanced services due to their increased vulnerability and psychosocial barriers to care[1]. In 1997, the MacColl Center for Health Care Innovation developed the Chronic Care Model (CCM) to provide a new framework to address this growing challenge to the traditional healthcare delivery system. The CCM recognizes the patient's central role in managing their own health and identifies care delivery and self-management support as key elements for improving chronic disease care[2]. Programs that have targeted these aspects of the CCM have demonstrated improved health outcomes for patients with multiple chronic conditions[3,4].

An important focus of the CCM is to increase patient activation, which can be broadly defined as a patient's knowledge, skills, and confidence in managing their own health[5]. Health literacy is a critical aspect of patient activation and has been shown to correlate with rates of hospitalization, adherence to treatment plans, use of preventive services, and mortality[6]. Another important element is the support of self-management skills. Successful self-management includes taking medications appropriately, making appointments, recognizing alarm symptoms, and performing at-home monitoring consistently; self-management is a necessary part of chronic disease care.

One approach for developing patient activation is the use of motivational interviewing, which is a style of interaction characterized by a collaborative partnership with patients that respects patient autonomy and aims to increase intrinsic motivation for change. Motivational interviewing has been demonstrated through meta-analysis to effectively mobilize patients to establish goals, develop self-management plans, and problem-solve[2]. These skills allow patients to take an active part in their care. Improvements in health literacy and self-management skills can in turn increase patient's belief in their ability to change their health behaviors[7,8]. Self-efficacy, or the belief in one's ability to be successful in a particular domain, itself correlates with improved heath outcomes[9]. Patient self-efficacy for controlling dietary fat, weight, smoking, and alcohol consumption have been correlated with improvements in functional health, mental health, and self-rated health[10,11]. Thus, building self-efficacy represents a key leverage point in improving health outcomes.

Care coordination with case managed care has emerged as an important care delivery model for high-risk patients. Case managers use an interdisciplinary approach to address patients' biopsychosocial needs and help patients navigate the healthcare system by calling between office visits, monitoring the status of tests and referrals, and coordinating subspecialty care. The rapport and continuity of care that occurs through care coordination can also serve as a platform from which health literacy, self-management skills, and health-related self-efficacy can be developed. Care models that include coordinated and continuous health management have been shown to improve patient health outcomes at lower costs for patients with multiple health and social needs[12].

Creation of the CCS

Although the UCSD SRFCP has demonstrated success in managing chronic disease, there is room for improvement in the most complex of patient cases[13]. In the UCSD SRFCP, as in the broader health care system, there is a spectrum of patient complexity. Patients who are more complex represent a challenge to the current SRFCP care model. The SRFCP has the unique privilege of providing unhurried clinical visits, as medical student providers see only one or two patients in the course of a four-hour clinic session. However, in many cases, patients are seen by a different medical student during each clinic visit. This lack of continuity, especially for complex patients, results in devoting much clinical time to gathering data anew rather than advancing patient activation through the development of health behavior change skills.

In order to address these needs, a small pilot service, termed the Complex Care Service (CCS), was created fall 2014 to provide case managed care for some of the most complex SRFCP patients. This service was designed by three medical students (Sydney Thayer, Silvia Fonseca, Adeola Martins) and a faculty fellow in underserved medicine (Dr. John Adams). The pilot service paired three medical students longitudinally with a single patient, trained students as case managers, and facilitated health behavior change through health coaching and motivational interviewing techniques. The following winter, the case managed care of these patients was transitioned to first year medical students, including myself.

As a CCS case manager at the Pacific Beach clinic, I had the opportunity to work with a single patient over the course of one year. I scheduled appointments with my patient every other week and follow-up via telephone call between visits. I met regularly with SRFCP physicians, social workers, pharmacists, and peers to discuss patient care. These

multidisciplinary meetings guide future patient interactions, and facilitated coordination of care with various sub-specialty teams within the SRFCP.

The other CCS case managers and I continued the legacy of the CCS by *developing and refining clinical tools, expanding the service, and formalizing medical student training in motivational interviewing and health behavior change.* Our efforts, with the support of a Gold Humanism Honor Society Service Award granted to Griffin Gorsky and myself, would ultimately culminate in the creation a student-run elective, FPM 275, that serves to sustainably continue the CCS initiative of case managed care at the SRFCP.

METHODS
Developing and Refining Clinical Tools

The CCS team developed and refined three clinical tools to facilitate continuity of care and patient activation. Tools included a social history intake form, chart review template, and after visit summary.

The social history intake form was initially created by the first CCS student cohort, and subsequently refined by my cohort to serve as a tool to ask questions about patients' life stories, to delve into social determinants of health, to build rapport, and to better understand the patents' sources of strength and barriers to healthcare access. I then developed a 'dot-phrase' in Epic (.CCSsocial) to facilitate documentation of this social visit.

Our chart review template provided a structure to completed an extensive one-year chart review and medical summary prior to seeing the patient for the first time (figure 1). The chart review template also provided a guide to monitor the patient's clinical markers over time and set appropriate clinical goals. It also facilitated care plan discussions with SRFCP physician.

The after visit summary (AVS) we refined in both English and Spanish is a template for students to work with patients, through teach-back, to comprehensively summarize current medications, issues discussed during the encounter, follow-up plans, and patient-driven goals (figure 1). The AVS served as a platform for patient activation and motivational interviewing.

Expanding the CCS

At its onset, the CCS consisted of three medical student case managers and three patients selected on referral basis. Systematic identification of high-risk patients, as described in 'Part 1' to this project, enabled expansion of the CCS to five additional patients for a total of eight patients at three clinical sites. Five patients were seen by rising second year medical student case managers at the SRFCP beginning summer 2015; three patients were seen by third year medical students participating in their primary care clerkship (PCC). The patients selected for case managed care continue to be followed by a single medical student until transitioning to a new student case manager winter 2016. This transition was facilitated by the creation of a student run elective, FPM 275.

Figure 1. Clinical Tools
The left-sided panel shows the Chart Review tool, which medical students may use to monitor patient conditions and medical interventions over time. The right-sided panel shows the After Visit Summary, which medical students complete with patients using teach-back and provided to patients at the end of a visit. A digital copy of each tool is available on the SRFCP ishare account.

Formalizing Medical Student Training

   To ensure sustainable case managed care for the patients enrolled in the CCS after active student managers graduate from the SRFCP, four medical students (Griffin Gorsky, Neha Chandra, Payal Desai, and myself) transformed the CCS into a student-led elective course. Five first-year medical students were enrolled in the elective the first quarter that it was offered, winter 2016; each student was paired with one complex patient previously followed by a second-year medical student.

   The course, *FPM 275: Chronic Disease Management and Health Behavior Change*, served as an adjunct to the current SRFCP courses offered at UCSD, equipping students interested in primary care with the tools needed for case management of complex patients. The three-credit hour course strengthens student knowledge of the biopsychosocial aspects of chronic disease management through a better understanding of their patient's socioeconomic context and barriers to healthcare, their patient's medical conditions, the tool and skills needed for health behavior change (HBC), and a better understanding of themselves. These areas are explored, and skills like motivational interviewing (MI) are practiced over five didactic sessions and three clinical sessions (Table 1). The FPM 275 course syllabus is provided in Appendix A.

WEEK	DIDACTIC SESSION	CLINICAL SESSION
1	Course Description Patient Introductions	--
2-3	--	Social
4	Chart Review Patient Goal Setting	--
5-6	--	Medical
7	Health Behavior Change (HBC) Motivational Interviewing (MI)	--
8-9	--	Medical
10	Case Presentations	--
11	Personal Development Transitions	--

Understanding the Patient's Social Context

Understanding the Patient's Medical Conditions

Understanding MI and how to Promote HBC

Integrating HBC Skills and Tools

Understanding Self

Table 1. FPM 275 Curriculum
The FPM 275 elective consisted of five didactic sessions intermixed with three clinical sessions. These sessions were grouped to meet the four elective goals: understanding the patient's social context, understanding the patient's medical conditions, understanding MI and HBC and how those skills and tools integrate with patient care, and understanding self.

In order for students to feel equipped to work on HBC with their patients, they had to first be comfortable with two areas: the social context of their patients, and the complexity of their patient's medical issues. The first two didactic sessions were devoted to developing these skills. In the first session, we asked students to consider certain aspects of their patient's social history, as well as practice taking a detailed social history through role play exercises. The social history intake form served as a tool to facilitate information gathering. Before the next didactic session, students had the opportunity to apply these skills with their assigned patient at a 'social visit'; when possible this social history interview was performed at the patient's home. In the second didactic session, to help students feel comfortable addressing their patient's medical issues, we discussed some of the most common diseases SRFCP patients face. Using diabetes as a case study, we reviewed common symptoms, discussed relevant questions to elicit a detailed history, and asked students to consider what goals they might consider setting with diabetic patients. Next, to familiarize students with their patients' specific medical problems, we guided a systematic chart review using our chart review template, so that students would gain a holistic longitudinal understanding of their patient's medical history. This didactic session was then followed by a medically focused visit at the patient's home or at a SRFCP clinic site to better understand patient health concerns.

In order promote HBC, students practiced health coaching techniques. During the third didactic session, Dr. Ellen Beck introduced the students to the concept of MI and we facilitated practice in pairs. The students further reinforced these skills with their patients at their next medical visit. During the fourth didactic session, students presented their patients and experiences in case managed care up to that point. A group feedback session followed each presentation so that students could work together to brainstorm techniques to address patient care concerns and HBC challenges.

The fifth and final didactic session was dedicated to a discussion of next steps. A large aspect of this revolved around understanding self. First, we focused on helping students reinforce individual values and motivations for medicine. This fostered discussion of personal self-care methods to prevent burn-out. Next, we discussed goal-setting and leadership. This set the stage for students to plan their continued involvement in case managed care for their SRFCP patients and to discuss leadership opportunities for working with the next cohort of students to enroll in FPM 275.

RESULTS

Focusing on case managed care and using MI has allowed us, over a short period of time, to see positive HBC in patients identified as the most complex at the SRFCP. Patients have made extraordinary bounds toward managing chronic conditions, with many showing improvements in their hemoglobin A1c and exercise tolerance; other patients have reported feeling more empowered and in control of their health. Student managers have also endorsed feeling more confident in their ability to engender HBC and to take ownership of patient care.

What started as a small pilot service has developed into a self-sustaining elective that trains medical students in HBC and case managed care, while also creating a means to improve care for the most complex patients at the SRFCP.

In order to elective ensure sustainability and equip future student leaders to facilitate ongoing case-managed care through FPM 275, the course syllabus, didactic session power points, and student case manager tools are available on the SRFCP ishare account. Student leaders may adapt these resources to better suit the needs of the students enrolled in their cohort.

DISCUSSION

Continuing Transitions, Continuing the Legacy

The five medical students enrolled in the first quarter of FPM 275 continued to provide case managed care to their patients for the rest of the calendar year. One student (Michelle Keyser) led the next cohort of four first year medical students enrolled in FPM 275 winter 2017. The members of the original FPM 275 cohort who left the SRFCP at the end of their second year effectively transitioned their case managed patients to the incoming cohort through the elective. One student in the original FPM 275 cohort (Ari Gushue) continued to provide case managed care to her continuity patient as a PCC student in her third year of medical school. She plans to continue case managed care with a SRFCP hotspotting project that pairs patient complexity with food insecurity. This is a potential avenue for future work through the FPM 275 elective to continue the legacy of hotspotting and case managed care.

As a MS4, I now have had the opportunity to partner with the current student leader of FPM 275 (Michelle Keyser) to recruit an incoming student-leader, and thereby continue what the CCS started through the student-run elective. The FPM 275 elective will be open for enrollment winter 2018. A second year medical student (Becca Gold) will lead the elective in collaboration with Dr. Ellen Beck.

FUTURE WORK

Future work includes continuation and expansion of case managed care through FPM 275. This may include enrolling more students in FPM 275 and thereby more patients into case managed care. Another area of expansion may include adaptation of the current FPM 275 curriculum; the course syllabus and didactic lesson presentations are available on the SRFCP ishare account and may be modified to better suit the needs of the subsequent student cohorts as each year's student leaders and Dr. Beck see fit. One area of curriculum adaptation may include incorporation of patients seen by the UCSD hotspotting team. In this way, students enrolled in the elective may learn more about hotspotting and community resources available for patients, thereby putting hotspotting into practice in the community and at the SRFCP by learning HBC tools to provide case managed care to 'super-users'. The scope of enrollment in case managed care can also be expanded by evaluating patient complexity along with food insecurity, as is being done by Ari Gushue.

Another area of future work could include curriculum evaluation with pre- and post-course assessments of knowledge, attitudes, and skills associated with health behavior change and motivational interviewing. Though interested in such an assessment with the original cohort, we were unable to gain IRB approval before the course began. However, an example of such a survey is included in Appendix B. In addition to assessing the curriculum through the lens of the medical student's experience, objective patient outcomes after enrollment in case managed care may also be assessed.

On a larger scale, UCSD medical students may work with students at other institutions to create similar case managed care programs. The development of the FPM 275 elective was presented at the Student Run Free Clinic Conference in 2015 with the hope that other medical students would create similar programs at their institutions; this may be brought to fruition by further dissemination of the ongoing work in case management at future Student Run Free Clinic Conferences.

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FPM 275: Chronic Disease Management and Health Behavior Change
Winter Quarter, 2016 -- 3 Credits (S/U)

I. OVERVIEW

Through this course, students will strengthen their knowledge of the biopsychosocial aspects of chronic disease management and will deepen this knowledge through a better understanding of themselves, their patients, and the skills needed to address barriers to creating health behavior change. The course will serve as an adjunct to the current Free Clinic electives offered at UCSD SOM. The course will create an environment for first year medical students to practice 'cultural humility', understand a patient's experience with illness, and learn, implement, and improve upon their motivational interviewing skills over time with a small patient panel that they will follow during the course.

II. GENERAL INFORMATION

Course Credit: 3 credit hours
- Number of classroom sessions: 5 (2 hour sessions)
- Number of required patient visits/clinical sessions: 3

Location/Time
- Class Sessions will meet on Thursday afternoons (see schedule) in **MET 303**
- Clinical Sessions will occur at the assigned patient's SRFCP site

Prerequisites
- Completion of or co-enrollment in Free Clinic I (FPM 272)

Evaluation
- The course is pass/fail
- A passing grade is earned when all the requirements are met (see below)

Contact Information
- The administrator for the course is Lisa Deferville
  - Department of Family Medicine and Public Health, Free Clinic Administrative Office, Laurel Building, Room 134
  - Phone number: (858) 534-6160
  - Email: ldeferville@ucsd.edu
- Faculty
  - Dr. Ellen Beck: ebeck@ucsd.edu
- Student Leaders
  - Oresta Tolmach: otolmach@ucsd.edu
  - Griffin Gorsky: kgorsky@ucsd.edu
  - Payal Desai: ppdesai@ucsd.edu
  - Neha Chandra: nvchandra@ucsd.edu

III. SCHEDULE OF REQUIRED STUDENT ACTIVITIES

Class and Clinic Sessions Schedule

Thursday, January 14, 2016 @ 3-5 pm, MET 303
Session 1: Course Description, Patient Introductions
1. Welcome & Overview
    a. Students state personal narratives related to taking this course and their learning goals
    b. Administer pre-course assessment
    c. Explain course and its history
    d. Student leaders describe their patients' stories and their experiences with them at Free Clinic
    e. Syllabus and ground rules, including confidentiality
2. Understanding the patient context
    a. Define and review terms, including 'cultural humility', health literacy, and social determinants of health
    b. Patient case study
    c. Social history practice
3. Preparation for your social visit
    a. Students will be assigned a patient already known to the SRFCP whom clinical faculty have identified as needing increased levels of continuity and chronic disease management
    b. Schedule a visit
4. Students will be assigned reading regarding hot-spotting and management of complex patients, to be completed prior to next class session.
    Gawande, A. The Hot Spotters: Can we lower medical costs by giving the neediest patients better care? The New Yorker. January 24, 2011, 41-53.

January 15 – January 27, 2016
Patient Visit 1: Social visit at Free Clinic
After class session 1, under the supervision of a licensed health professional, students will do an initial social history and goal assessment with the patient. This visit will focus on the social determinants of health.

Thursday, January 28, 2016 @ 3-5 pm, MET 303
Session 2: Chart Review, Patient Goal Setting
1. Check in/brief reflection about clinic visit experience
2. Prepare for medical visit by completing patient's chart review under supervision of student leaders and licensed health professional
    a. Each student will go through their patient's chart to identify core medical conditions and track their trajectory over time
3. Students will learn how to plan for the next visit with their patient, including:

a. Making a clinical to-do list to maintain clinical continuity (what are the health tracking tools that can be used, what are the important labs/referrals to consider, how do you follow-up with medication compliance)
b. How to set and follow-up on long- and short-term patient goals
c. How to implement 'teach-back'

January 29 – February 10, 2016
Patient Visit 2: Medical visit at Free Clinic
After class session 2 (or according to patient and clinic schedule), students with direct faculty supervision will utilize knowledge of patient medical history and clinical care to guide patient health behavior change.

Thursday, February 11, 2016 @ 3-5 pm, MET 303
Session 3: Health Behavior Change (HBC) & Motivational Interviewing (MI)
1. Check-in/brief reflection about clinical visit experience
2. Presentation on evidence-based approaches to HBC, including Motivational Interviewing(MI)
3. MI practice session including role-play with case vignettes
    a. Practice role-play scenarios based on patient care challenges identified by the students
    b. Practice implementing next steps in MI, including how to address challenges
4. Plan an approach for applying MI/HBC to assigned patient
5. Students will be given an assignment to identify and read a peer-reviewed article that addresses HBC for one of their patient's health problems

February 12 – February 24, 2016
Patient Visit 3: Medical visit at Free Clinic
After class session 3, students with direct faculty supervision will utilize knowledge of patient medical history and implement motivational interviewing techniques to guide patient health behavior change.

Thursday, February 25, 2016 @ 1-3 pm, MET 303
Session 4: Student Case Presentations
1. Check-in/brief reflection about clinical visit and use of MI
2. Students will briefly discuss the article related to HBC assigned during class session 3
3. Each student will present about their patient (10 minutes each)
    a. What they learned about the chronic conditions from their patient
    b. How social determinants of health have affected their patient
    c. Clinical and behavioral aspects of care provision
    d. Next steps for their patient
    e. What they have learned about themselves and their values as a leader/future physician

4. Follow each presentation with group feedback session in which group collaborates with student to brainstorm techniques to address patient care challenges

Thursday, March 10, 2016 @ 1-3 pm, MET 303
Session 5: Personal Development, Course Feedback, Transitions
1. Discussion about burnout/self-care
2. Value Sort Activity to help students clarify and reinforce individual values
3. Student recommendations related to course continuity and improvement
4. Planning for student involvement and leadership for next year

IV. COURSE LEARNING OBJECTIVES

1. Scope/Goal: An important element of serving patients is to first understand their experience within their communities and with the health care system.
Objective 1: By the end of this course, students will be able to
    A. Name and describe the neighborhood in which their patient lives.
    B. Identify social determinants of health as they relate to their patient.
    C. Summarize and apply their knowledge of their patient's social history to the patient's medical care at the Free Clinic Project.
    D. Demonstrate humility and respect for the patient in the process of eliciting the patient's social history.

2. Scope/Goal: There is a subset of patients at the free clinic who have multiple chronic illnesses. Students working with these complex patients must therefore be well-versed in chronic disease clinical presentation and management.
Objective 2: By the end of this course, students **under the direct supervision of clinical faculty** will be able to
    A. Name common chronic diseases within the free clinic population
    B. Identify key concerns, red flag symptoms, and comorbidities that may affect patient care or the patient's ability to manage his or her illnesses.
    C. Utilize the EHR to track key components of the patient's health information over time, e.g. Hb A1c.
    D. Explain a chronic illness to the patient using appropriate health literate terms and 'teach back'.
    E. Develop a clinical assessment and plan that addresses the patient's biopsychosocial concerns.

3. Scope/Goal: In order to help patients with chronic illnesses, there is a need for students to be comfortable using techniques related to health behavior change including motivational interviewing.
Objective 3: By the end of this course, students **under the direct supervision of clinical faculty** will be able to

A. Practice evidence-based strategies, such as motivational interviewing, to work towards health behavior change with their patients.
B. Define "patient activation", its core elements, and how to monitor it in their patient.
C. Help patients identify and monitor patient driven goals related to health care
D. Utilize an after visit summary and teach back on a consistent basis
E. Integrate the patient driven goals and health behavior change plan into the patient's EHR.
F. Develop basic coaching skills, such as being able to provide and receive constructive feedback regarding their skills related to patient care.

4. Scope/Goal: In order for students to effectively serve their patients, it is good for them to be aware of their own values, vision, needs, and limitations for their career in service. Students must also be able to maintain their own emotional well-being in the face of challenges, especially in resource poor settings.

Objective 4: By the end of this course, students will be able to
A. Articulate a clear and unique personal vision.
B. Identify core values, needs, and limitations for their career in service.
C. Reflect on the ways their life experiences and values may influence their patient interactions.
D. Identify key elements for their own self-care.

V. GRADING/ASSESSMENT AND EVALUATION OF STUDENT PERFORMANCE

Criteria for Pass:
- Attendance at a minimum of 80% of class sessions, with written notification/justification to course director prior to any missed sessions
  - Attendance at three clinical sessions at free clinic
    - Attendance record submitted to Lisa Deferville by the end of the quarter (by email or in person).
  - Case Presentation
    - A 10 minute presentation with Powerpoint or written outline at the end of the quarter about the student's patient history and clinical progress, including at least **three specific learnings,** which may include medical, administrative, or personal learnings, as well as how their patient was their teacher.
- Student self-documentation checklist of achieving the learning objectives

For unethical or unprofessional discretions that could result in "failure," please see the Policy on the Evaluation of Professionalism in the Advisor and Student Handbook."

VI. STUDENT EVALUATION OF COURSE AND FACULTY

Medical students must complete course and faculty evaluations of this and all School of Medicine courses in order to receive a grade. The identity of individual students will not be shared with the course instructors.

SID:_____

Date:_____

Currently enrolled in (*circle one*): Free Clinic I   Free Clinic II

FPM 275: CHRONIC DISEASE MANAGEMENT AND HEALTH BEHAVIOR CHANGE

PRE-COURSE ASSESSMENT
Please circle or fill in responses as appropriate for each of the following questions.

1. Understanding a patient's social and physical environment is essential to providing high-quality health care.

Strongly disagree		Neutral		Strongly agree
1	2	3	4	5

2. Your 34 year-old previously well-controlled diabetic patient comes to see you 4 months after her last visit. She lost her job 3 months ago and now has no income. She receives food stamps, but is no longer able to afford the diabetic-friendly foods that had kept her blood sugars in control. Her glucometer shows blood glucose levels much higher than those during her visit 4 months ago. This scenario <u>best</u> highlights the concept of:
   a. Social determinants of health
   b. Access to care
   c. Cultural humility
   d. Health literacy

3. How confident do you feel in your skills and ability to take a social history from a patient?

Not at all confident		Neutral		Very confident
1	2	3	4	5

4. How confident do you feel in your ability to identify key information pertaining to your patient's medical history and current medical care in their electronic medical record?

Not at all confident		Neutral		Very confident
1	2	3	4	5

5. You have finished discussing your Free Clinic patient with your attending and diagnose him with hypertension. You understand the pathophysiology and clinical course of the disease. It is now your job to discuss the diagnosis with your patient. How confident do you feel in explaining a chronic illness to a patient?

Not at all confident		Neutral		Very confident
1	2	3	4	5

6. _____ is an effective method used to assess patient comprehension of healthcare information discussed during a physician-patient encounter.

7. Which of the following does <u>NOT</u> describe Motivational Interviewing and its goals?
    a. It is an opportunity for patients to explore and resolve ambivalence to change
    b. It requires a directive counseling style
    c. It is conducted as a non-judgmental, compassionate conversation
    d. It employs a physician-centered approach

8. OARS is an acronym for the 4 tools used in Motivational Interviewing. Which of the following is <u>NOT</u> included in the OARS toolkit?
    a. Offer advice
    b. Affirm
    c. Reflective listening
    d. Summarize

9. How confident are you in your ability to use Motivational Interviewing with your patients?

Not at all confident		Neutral		Very confident
1	2	3	4	5

10. How confident do you feel in your ability to collaborate with patients to create short- and long-term goals for health behavior change?

Not at all confident		Neutral		Very confident
1	2	3	4	5

11. I am aware of how my personal values and life experiences influence my interaction and encounters with patients.

Strongly disagree		Neutral		Strongly agree
1	2	3	4	5

12. How confident do you feel in your ability to articulate a personal vision for yourself in medicine, including setting short and long-term goals.

Not at all confident		Neutral		Very confident
1	2	3	4	5

13. Behavior change counseling is an important and effective intervention performed by physicians.

Strongly disagree		Neutral		Strongly agree
1	2	3	4	5

14. How satisfied are you with your training to date regarding counseling patients to change health behaviors?

Not at all satisfied		Neutral		Very satisfied
1	2	3	4	5

SID:_____
Date:_____
Currently enrolled in (*circle one*): Free Clinic I   Free Clinic II

FPM 275: CHRONIC DISEASE MANAGEMENT AND HEALTH BEHAVIOR CHANGE

POST-COURSE ASSESSMENT
Please circle or fill in responses as appropriate for each of the following questions.

1. Understanding a patient's social and physical environment is essential to providing high-quality health care.

    Strongly disagree   Neutral   Strongly agree
         1   2   3   4   5

2. Your 34 year-old previously well-controlled diabetic patient comes to see you 4 months after her last visit. She lost her job 3 months ago and now has no income. She receives food stamps, but is no longer able to afford the diabetic-friendly foods that had kept her blood sugars in control. Her glucometer shows blood glucose levels much higher than those during her visit 4 months ago. This scenario best highlights the concept of:
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COURSE EVALUATION

Overall rating: On a scale from 1 to 5 (with 5 being the highest)

1. I would rate the instruction overall as…   1   2   3   4   5

2. I would rate the value of this course to me overall as...   1   2   3   4   5

3. I would rate my overall satisfaction with the course as…   1   2   3   4   5

Please circle the answer that best describes your reaction to this course:

4. Were the goals clear?   Yes   Somewhat   No

5. Were the instructional techniques and materials   Yes   Somewhat   No
    helpful in your learning of the material?

6. Was the level of content and amount of detail   Yes   Somewhat   No
    appropriate for the allotted time?

7. Were you encouraged to participate in the sessions?   Yes   Somewhat   No

8. Please describe the key learning points you found useful from this course:

9. Any suggested improvements for the course: