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# Does the Proportion of Same-Day and 24-Hour Appointments Impact Patient Satisfaction?

Jason P. Richter, PhD; Lynn Downs, PhD; Brad Beauvais, PhD; Peter V. Huynh, MSA; Jessica E. Hamilton, BSBA; Forest Kim, PhD; Fred Weigel, PhD

**Background:** The relationship between open access and patient satisfaction is mixed. Our study is the first to assess the relationship between open access appointment scheduling and patient satisfaction in the Military Health System (MHS). It is also unique in that we examine both same-day and 24-hour access through a relationship with satisfaction. **Methods:** We conducted a panel time-series analysis with general estimating equations on the Army population of outpatient facilities (N = 32), with 32 364 957 total observations. Our primary independent variables were the proportion of a facility's appointments within 24 hours and same day from July 2013 to May 2015. **Results:** We identified that a higher proportion of same-day appointments is associated with increased patient satisfaction with the ability to see their provider when needed. We did not find the same result when examining access within 24 hours. **Conclusions:** Open access appointment scheduling appears to have a greater impact on patient satisfaction with timeliness of care if that appointment is made the same day the patient presents to the facility. Facilities should consider opening more of their schedule to accommodate same-day appointments. This can result in less costly primary care instead of emergency department usage.

Key words: access to care, military health, patient satisfaction, quality

#### PATIENT SATISFACTION

Patient satisfaction, under the umbrella of the broader patient experience, has grown in prominence in recent years with its incorporation into the Centers for Medicare & Medicaid Services value-based purchasing model. This model is composed of the following domains for 2017: 25% outcome measures, 25% patient experience of care, 25% efficiency, 20% safety, and 5% process of care measures. The percentage of diagnosis-related group payments tied to performance on those domains is 2%. Patient satisfaction also affects health care utilization rates, clinical outcomes, continuity of care, patient retention, and malpractice lawsuits. <sup>2</sup>

Access to care, quality of care, and interpersonal interaction with staff account for the majority of variance in overall patient satisfaction.<sup>3,4</sup> Other literature indicates that a host of variables may influence patient satisfaction. Age,<sup>5</sup> gender,<sup>6</sup> and self-perceived health status<sup>7,8</sup> influence satisfaction at the individual level. At

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the facility level, patient satisfaction is known to differ on the basis of facility size, 9 location, and the presence or absence of a medical ICU.<sup>10</sup>

#### **ACCESS TO CARE**

In addition to patient satisfaction, access to care is a foundational tenet of health care quality and value. Access to care has been associated with increased health statuses, positive health outcomes, and decreased health disparities. 11 Access to care has become increasingly important as more emphasis is put upon prevention and wellness initiatives. 12 Studies have shown that increased access to care not only improves health outcomes but also promotes operational efficiencies in the treatment setting, decreases time in between appointments, and improves continuity of care. 13 In addition, better access to care has been linked to fewer nonemergent urgent care and emergency department visits. 14-16

Open access—a scheduling process in which a percentage of daily appointments are set aside for use with same-day or 24-hour appointments—is an alternative to traditional appointment scheduling methods. In support of improving access to care, open access appointment scheduling has progressively been implemented to varying degrees in private and government organizations. While most studies show strong negative associations of open access with patient wait times, no-shows and emergency department and urgent care utilization, studies that explore the relationship between open access and patient satisfaction yield mixed results. 17,18 Despite the fact that many outpatient clinics are interested in or experimenting with open access scheduling, there are very few published studies that assess the relationship between open

access scheduling and patient satisfaction. A systematic literature review found neutral to small positive improvements in patient satisfaction across 6 studies.<sup>17</sup> Studies identified in that review examined overall patient satisfaction and did not examine patient satisfaction with the time to see their provider and did not control for perceived health status. Another study of military beneficiaries found that patient perceptions of the number of days between the appointment and the day the provider was seen was a contributor to overall satisfaction.<sup>19</sup> Existing studies are limited by small sample sizes and lack of controls, such as perceived health status, known to influence patient satisfaction.

#### THE MILITARY HEALTH SYSTEM

The Military Health System (MHS) is one of the largest health care systems in the United States, with total annual expenditures of more than \$50 billion. The MHS provides care directly to its beneficiaries through military treatment facilities (MTFs) and augments any additional care that cannot be delivered by an MTF through care purchased from civilian providers. The MHS has nearly 10 million eligible beneficiaries and has more than 20 000 inpatient admissions, 1.9 million outpatient visits, 2.54 million prescriptions, and 177 000 emergency department visits in an average week.<sup>20</sup> The Army has the largest share of beneficiaries in the MHS at 3.9 million.

Traditionally, a structured approach to appointment scheduling has been used in the MHS, wherein appointments for wellness, specialty, and routine care are booked with a provider at some point in the future, typically 7 to 28 days.<sup>21</sup> In 2008, MHS leadership released guidance to MTFs to offer some open access scheduling, to improve access to care, and to assist in improving patient satisfaction with access to care to greater than 90% (MHS, 2008).<sup>21</sup>

#### **PURPOSE**

The results of the influence of open access on patient satisfaction remain unclear. Studies we found in the civilian health care system have shown mixed results, although those studies did not control for perceived health status, a predictor of overall satisfaction. The relationship between open access appointment scheduling and patient satisfaction has not been studied in the MHS, and we did not find other studies that controlled for health status or studied an entire population of beneficiaries when examining this relationship. Also, we did not find studies that studied open access as both access within 24 hours and access in the same day. Thus, the purpose of our study was to assess the relationship between open access appointment scheduling and patient satisfaction in outpatient facilities. We also sought to determine whether having an appointment the same day or within 24 hours impacts patient satisfaction to different degrees.

We framed our 2 primary research questions as follows: (1) what is the impact of same-day outpatient

access on patient satisfaction and (2) what is the impact of outpatient access within 24 hours on patient satisfaction?

#### **METHODS**

#### Intervention

To accommodate same-day scheduling of appointments, schedules were actively managed by a practice manager. Each primary care clinic was instructed to book 2 additional appointments per day beyond capacity to account for patient no-shows. Clinics also had the ability to set the ratio of same day or future appointments available on the schedule.

#### **Data collection**

Two sources provided the data required for this study. Encounter data were extracted from the MHS Management Analysis and Reporting Tool (M2). M2 is a powerful ad hoc query tool used to manage and oversee health care operations worldwide. Patient satisfaction scores were drawn from the Army Provider Level Satisfaction Survey (APLSS). The APLSS is a comprehensive outpatient provider-level satisfaction tool with a similar design to that of the Hospital Consumer Assessment of Healthcare Providers and Systems. The APLSS program randomly selects patients within 24 hours after an encounter with a health care provider and generates a mailed survey (Figure 1).<sup>22</sup>

The unit of analysis is at the parent military treatment facility (parent MTF). In the civilian health care system, this is similar to a national health care system that has local or regional groups of facilities. This study included the entire Army parent MTF population of 32, of which there are 107 individual MTFs.<sup>23</sup> We included data from all encounters between July 2013 and May 2015. The final study data set included a total of 32 364 957 encounters and satisfaction surveys. We aggregated data to the parent MTF by month.

#### Variables

Table 1 provides the list of variables used in the final analysis: independent variables, dependent variables, and control variables. All variables are aggregated at the parent MTF level.

Our study uses 2 primary dependent variables, see provider when needed and overall satisfaction. "See provider when needed" relates to the APLSS question that asks patients to score, "In general, I am able to see provider(s) when needed." Overall satisfaction is from the APLSS survey question that asks, "Overall, how satisfied are you with your health care?" The values for each of those questions are calculated as a percentage of patients who scored the question as "Agree" or "Strongly Agree."

We use 2 primary independent variables: sameday appts and 24-hour appts. We calculated sameday appts as a percentage of each parent MTF's appointments made within the same day the patient requested the appointment. The 24-hour appts variable is the percentage of appointments that occur within



#### SURGEON GENERAL OF THE ARMY SURVEY PROGRAM OFFICE DECISION SUPPORT CENTER (DASG-PAE-DSC) 7700 ARLINGTON BLVD STE 5140 FALLS CHURCH, VA 22042-5140



Incorrect (X)

Please use pen or dark pencil to mark an "X" in the answer box.

Correct X

EXAMPLES:

#### **Army Patient Satisfaction Survey**

We need your help. We are trying to improve the quality of care we give our Soldiers and their families.

STAF HEF	

Our records show that you got care from the provider named below. <PROVIDER RANK><PROVIDER> Is that right?

Yes 

→ Please continue with the survey.

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Figure 1. APLSS Adult Questionnaire (continues).

24 hours of when the patient made the request for the appointment.

The control variables account for differences in patient and delivery system characteristics. Three variables, perception of health, mean age, and percent male, accounted for patient characteristics, and one variable, total encounters, accounted for delivery sys-

tem size. We used perceived health status as a control variable because other studies have shown it to be a significant contributor to patient satisfaction. Perception of health is from the question, "In general, how would you rate your overall health?" We calculated the perception of health variable as a percentage of patients who scored "Good," "Very Good," or

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Figure 1. (Continued).

"Excellent" to question 26 of the survey. Previous studies of satisfaction included age, gender, and facility size, and thus we included these variables in our study as control variables.<sup>5,6,25</sup>

#### **Analysis**

We conducted a panel time-series analysis with general estimating equations (GEEs) to account for the

multiple observations per sample.<sup>26</sup> GEE is an appropriate method for longitudinal data analysis and to assess the effects on the covariate average of a continuous dependent variable in a population.<sup>27</sup> Hubbard et al<sup>28</sup> found that GEE provides a more useful approximation of population averages than mixed models because mixed models may be based on unverifiable assumptions on the data-generating distribution,

M2

M2

M2

Age

Size

Gender

Age

Male

Encounters

Table 1. Variable Table							
Measurement	Variable Name	Use in Analysis	Type of Data	Measurement Units	Data Source		
Access	Same-day	IV	Continuous	% of same-day appts	M2		
Access	24-h	IV	Continuous	% of 24-hour appts	M2		
Satisfaction	See provider when needed	DV	Continuous	% of patients who agree or strongly agree with satisfaction to see provider when needed	APLSS		
Satisfaction	Overall satisfaction	DV	Continuous	% of patients who are satisfied or completely satisfied with health care received	APLSS		
Patient health	Perception of health	Control	Continuous	% of patients who rate very good or excellent in perception of overall health	APLSS		

Continuous Abbreviations: APLSS, Army Provider Level Satisfaction Survey; DV, dependent variable; IV, independent variable; M2, Military Health System Management Analysis and Reporting Tool.

Continuous

Continuous

Average age

% of male patients

Total encounters

which can lead to biased inference and misleading estimates.

Control

Control

Control

We analyzed 2 separate GEE models for each of the 2 dependent variables and labeled them models 1 to 4. For each of the 2 dependent variables, we included the same control variables, but used only a single independent variable of interest, percent of same-day appointments, or percent of 24-hour appointments. We conducted the analysis, using IBM SPSS Statistics for Windows, Version 22 (Armonk, New York).

#### **RESULTS**

Table 2 provides the detailed descriptive statistics for each of the variables in our study of 32 facilities. Sameday appointments range from 0 to 1.63% (M = 0.26): SD = 0.14), while 24-hour appointments range from 4.98% to 33.91% (M = 16.07; SD = 5.56). Sameday appointment is the percentage of each parent MTF's appointments made within the same day the patient requested the appointment, while 24-hour appointment reflects the percentage of appointments that occur within 24 hours of when the patient made the request for the appointment. "See provider when needed" ranges from 49.11% to 97.33% (M = 83.30;

Table 2. Descriptive Statistics<sup>a</sup> Variable М SD Min Max Same-day 0.26 0.14 0.00 1.63 24-h 33.91 16.07 5.56 4.98 See provider when 83.30 5.73 49.11 97.73 needed Overall satisfaction 91.63 3.84 64.23 98.41 Perception of health 63.93 6.84 29.09 85.54 Age 28.87 3.81 23.27 37.58 Male 56.31 4.62 48.58 68.51 Encounters 30988.93 1637.00 133154.00

Table 3. GEE Multiple Regression on See Provider When Needed <sup>a</sup>								
	β	SE	P	β	SE	P		
Independent variables								
Same-day appts	1.81	0.80	.023					
24-hour appts				0.02	0.08	.779		
Controls								
Perception of health	0.16	0.03	<.001	0.16	0.03	<.001		
Encounters	0.00	0.00	.063	0.00	0.00	.104		
Male	0.08	0.11	.474	0.09	0.11	.452		
Age	0.35	0.17	.036	0.38	0.17	.030		

Abbreviation: GEE, Generalized Estimating Equation.

<sup>a</sup>We ran 2 separate models: one with same-day appts and the other with 24 hours. N = 32 parent military treatment facilities.

SD = 5.73), while overall satisfaction ranges from 64.23% to 98.41% (M = 91.63; SD = 3.84). These numbers reveal the percentage of patients who agreed or strongly agreed with questions related to the ability to see the provider when needed, and overall satisfaction.

In Table 3 we show a significant association with the percentage of same-day appointments on the ability to see provider when needed ( $\beta = 1.81$ ; P = .023), although we did not find the same relationship for 24hour appointments ( $\beta = 0.02$ ; P = .779). The same-day appointments coefficient can be interpreted as follows: for a 1% increase in the percentage of appointments that are same day, the patient satisfaction with ability to see provider when needed increases 1.81%. Two of the control variables, perception of health and age, also show significance with satisfaction with the ability to see the provider when needed.

We did not find significant associations of the access to care variables on overall satisfaction (see Table 4). The same-day appointments ( $\beta = 0.04$ ; P = .955) and 24-hour appointments variables ( $\beta = 0.04$ ; P = .398) did

<sup>&</sup>lt;sup>a</sup>N = 32 parent military facilities.

Table 4.	<b>GEE Multiple</b>	Regression	on Overall
Satisfaction	on <sup>a</sup>		

	β	SE	P	β	SE	P
Independent variables						
Same-day appts	0.04	0.65	.955			
24-hour appts				0.04	0.05	.398
Controls						
Perception of health	0.07	0.03	.049	0.07	0.03	.040
Encounters	0.00	0.00	.039	0.00	0.00	.141
Male	<b>−</b> 0.12	0.06	.043	- 0.09	0.07	.201
Age	0.20	0.06	<.001	0.23	0.07	.001

Abbreviation: GEE, Generalized Estimating Equation.

 $^{\mathrm{a}}$ We ran 2 separate models: one with same-day appts and the other with 24 hours. N=32 parent military treatment facilities.

not have a significant relationship with overall satisfaction. Two of the control variables, perception of health and age, show significance with overall satisfaction.

#### DISCUSSION

We found a positive association between the percentage of same-day appointments and patient satisfaction with the ability to see their provider when needed, even after controlling for other factors found in previous literature to impact patient satisfaction. The relationship with 24-hour appointments and patient satisfaction with the ability to see the provider when needed was not significant, nor was the relationship between open access and overall patient satisfaction.

Our findings suggest the importance of having same-day appointment availability to satisfy patient perceptions of timely care. However, increases to the availability of 24-hour appointments may not yield the same benefits to satisfaction as increases to the availability of same-day appointments. This finding is consistent with a study on the Veterans Health Administration that found that longer waits were associated with satisfaction with treatment access.<sup>29</sup> This reflects that when a patient is ill or needs treatment the patient does not want to wait for that care because of the unknown or concern caused by that health issue.<sup>17</sup>

Receiving timely care is an important factor in preventing illnesses, reinjuries, and degrading conditions. If people are not satisfied with their access to care, they may not schedule necessary appointments or may seek out urgent care or emergency department care, at a much higher expense and reduced continuity of care. Studies suggest that patients who are less satisfied with ability to see their primary care provider are more likely to use urgent care and emergency facilities, and conversely, patients who are more satisfied are less likely to utilize costlier urgent care or emergency facilities. 30,31 Access to care is a predictor of emergency department utilization. When a patient can obtain an appointment within 1 day, it predicts fewer nonemer-

gent emergency department visits. <sup>16</sup> Because patients are more satisfied with the time to see the provider and are less likely to utilize urgent and emergency department care, appointment scheduling efforts should target improvement in same-day access. Improved access to care has the potential to decrease nonemergent emergency department utilization, thus minimizing unnecessary costs. Patients who are dissatisfied with their regular source of care or who cannot be seen in a timely manner may switch providers.

We add to existing literature on the relationship between open access and patient satisfaction, by controlling for perceived health status and through the examination of a large patient population that had not previously been studied. Our findings on the relationship between open access and overall satisfaction are consistent with other studies of the civilian health care sector that found neutral to small positive improvement from the implementation of open access appointment scheduling.<sup>17</sup> The speed to which patients see their providers does not appear to have a strong impact on satisfaction with overall health care. Therefore, hospitals that wish to improve upon that measure of satisfaction should consider other operational strategies.

#### **LIMITATIONS**

Although our analysis is thorough, it is not without limitations. For example, our data source is composed of only Army facilities; thus, our results may not generalize well to the civilian sector. However, we believe the volume of our data—the entire population of Army facilities, which provide service to 3.9 million beneficiaries—is a substantial strength that aids in generalizability of our results.<sup>23</sup> We also were unable to test for causality, although our study incorporated a repeated-measures design.

#### Directions for future research

Future studies should evaluate whether patient satisfaction with the ability to see the provider when needed impacts emergency department and urgent care utilization. We also suggest that future studies should consider pre- and poststudy data for facilities that decide to implement open access appointment scheduling, to assess causality. It would be interesting to see if our results hold true in organizations with high proportions of same-day appointments. Effective August 2016, the APLSS survey has been replaced by the Joint Outpatient Experience Survey. A future study should also expand to include the Air Force and Navy components of the MHS. The Joint Outpatient Experience Survey can be used for that purpose since it is the same survey instrument across the Army, Air Force, and Navy.

#### CONCLUSION

Medical facilities, particularly those in the Army, should strive toward increasing the amount of same-day access. Although further research is warranted, there appears to be a distinction between the benefit of same-day access and 24-hour access on satisfaction. When access to an appointment is available within 1 day, it significantly predicts fewer nonurgent emergency department visits, minimizing unnecessary health care system expenditures. When patients are not satisfied with their regular sources of care, they are more likely to visit the emergency department for nonurgent conditions. This finding, coupled with ours, highlights the importance of patients getting seen when they desire. In addition, increased same-day access has the potential to improve population health because patients are more likely to seek care when they need it.

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