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## Why patients should arrive late: The impact of arrival time on patient satisfaction in an academic clinic

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### ABSTRACT

**Introduction:** When considering quality improvement of healthcare practices, patient flow, wait time, and satisfaction are important factors to monitor. Patient wait time can affect satisfaction with the care received, and it can be dependent on many different factors. The purpose of this study was to investigate the impact of patients' arrival times to his/her appointment (early vs. on time vs. late) on patients' wait times and satisfaction.

**Methods:** 171 patients in an otolaryngology outpatient clinic completed surveys that asked them to record wait times in various areas of the clinic and to provide a satisfaction level for these wait times. Statistical analysis tested for any significant differences in wait time and satisfaction for patients that arrived early, on time, or late.

**Results:** Late, on time, and early arriving patients spent 18.2, 30.7, and 38.8 min in the waiting room, respectively. Late, on time, and early arriving patients had a total visit length of 57.4, 68.6, and 81.9 min, respectively. There was a significant difference with total time spent in the clinic ( $p=0.0034$ ) and for overall satisfaction with the total length of the visit ( $p=0.0202$ ) between late and early arriving patients. **Conclusions:** This study indicates patients arriving late had shorter wait times and, not surprisingly, were more satisfied with the visit. The study provides evidence that patients view their wait as starting when they arrive to the clinic and not the actual time of the appointment. It questions the traditional scheduling systems that many clinics still use and proposes that there may be "out-of-the-box" approaches that positively impact patient satisfaction.

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### 1. Introduction

*Patient flow* describes the rate and dynamics of patients as they move through a clinic. Patient flow is dependent on a wide variety of complex interactions and variables that produce a phenomenon that can be difficult to predict. Examples of variables that may cause congestion in a clinic include an inefficient physical layout of the clinic, poor communication, inadequate staffing at different levels, implementing a new electronic medical record software system, and an overall employee culture that does not embrace quality improvement<sup>1-3</sup>. It is important for both physicians and healthcare administrators to monitor patient flow when assessing patient satisfaction and productivity.

Wait time is easily quantified and often used to characterize patient flow, and it plays a critical role in predicting a patient's overall satisfaction with the quality of care they believe they are receiving<sup>4-6</sup>. However, other quantifiable measures should also be considered because wait time is not the only factor that contributes to a patient's overall satisfaction. One study in a primary care clinic found that the time spent with the physician was more important at indicating a patient's satisfaction than time spent waiting<sup>7</sup>. A balance must be considered; the clinic cannot rush patients through a visit while sacrificing the quality and individualized care that patients expect.

One aspect of patient flow that has not been investigated much is how patients' arrival times relative to the scheduled appointments influences patients' wait time and satisfaction. Clinics often arbitrarily suggest to patients to arrive 10–15 min early to avoid possible delays. However, arrival time can vary greatly as many patients do not heed this advice for a magnitude of foreseen and unforeseen reasons. One thing is certain no matter what time patients arrive – in this clinic all will end up waiting to be seen by

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the provider. In this study, we asked if arrival time impacts patients' wait times and satisfaction levels.

## 2. Methods

This was a cross-sectional study performed at an otolaryngology outpatient clinic affiliated with an academic hospital. The clinic operates 5 days a week from 8:00 am to 5:00 pm and is staffed by 4 otolaryngologists and 1 physician's assistant. The clinic has a patient volume of around 20,000 visits per year seen on a referral basis only. The clinic sees a wide range of socioeconomic backgrounds and has a patient payer mix made up of approximately 52% private insurance, 24% Medicaid, 20% Medicare, 3% self-pay/other, and 1% indigent program.

The University's Institutional Review Board concluded that this study fell under the quality assurance category and granted it exemption from the review process. Data collection was conducted at the point of care through self-administered anonymous surveys that were distributed to 208 patients seen during the study period. Upon checking in, all patients were individually approached and asked if he/she would be willing to help improve the quality of care the clinic provided by completing a survey inquiring about patient satisfaction and wait times. Patients were given oral instruction on how to fill out the survey upon agreeing to participate. Patients were not given any form of incentive for participating in the survey.

The survey divided the visit into six phases: (1) check-in time; (2) time called back by nurse; (3) time put into exam room; (4) time physician entered exam room; (5) time exam was finished; and (6) check-out time. The scheduled time of appointment and check-in time was filled out for the patients upon arrival at the front desk. For the next 4 phases the survey asked the patients to record the time for each transition and to indicate his/her satisfaction with the wait time they incurred between each phase. For the last phase, check-out time, the survey asked the patients to express an overall satisfaction level of his/her wait time for the entire visit. Patients were asked to rank their level of satisfaction according to the following scale: 1=very dissatisfied, 2=dissatisfied, 3=satisfied, 4=mostly satisfied, and 5=very satisfied.

Statistical analysis was performed using <http://www.vassarstats.net>. The Mann-Whitney nonparametric test was used to test for significant differences between the distributions of each group of patients' satisfaction with wait time based on arrival time (on-time vs. early; on-time vs. late; late vs. early). A standard, one-tail *t*-test was used to determine differences between lengths of examination time and lengths of the total visit depending on the patients' arrival time.

## 3. Results

Out of 208 surveys, 171 were returned for an 82.2% return rate. The results of the survey are summarized in Table 1. Overall, a majority of patients were very satisfied with the wait time in each area of the clinic. Out of 150 respondents that answered, 70.7% were very satisfied with the length of the total visit. Only 50.3% of 153 that responded were very satisfied with the amount of time they waited in the wait room lobby.

The mean total time spent in the clinic was 71.58 min with a range of 8–166 min (Table 1). The time patients waited in the lobby ranged from 2 to 152 min with a mean wait of 31.77 min. Table 2 summarizes the arrival time of patients based on three categories: Early (arrived > 15 min before scheduled appointment), on time (arrived between 0 and 15 min before scheduled appointment), or late (arrived ≥ 1 min after scheduled appointment). The mean arrival time for all patients was 9.47 min before the scheduled appointment and ranged from 90 min early to 24 min late. A majority of patients checked in either early ( $n=70$ , 40.94%) or on time ( $n=73$ , 42.69%). Only 28 (16.37%) patients arrived late. The late arrivals had an average arrival time of 8.75 min after the scheduled appointment, but this ranged from anywhere between 1 min and 24 min late.

Table 3 describes the wait time and satisfaction level of the time patients spent in the lobby, with the provider, and the length of the total visit for patients that arrived early, on time, and late. Patients arriving late, on average, spent 20.6 min less in the waiting rooms than patients arriving > 15 min early and about 12.5 min less than patients arriving on time to the scheduled appointments. There were no significant differences between the mean length of the examinations or the patients' satisfactions with these times for patients arriving late, on time, or late (see footnotes of Table 3). The entire length of the visit for patients arriving late was about 24.5 min less than the patients arriving early and about 11.2 min less than the patients that arrived on time.

There was a significant difference ( $p=0.0202$ ) with the satisfaction of the total length of the visit between patients arriving early (mean satisfaction score=4.26, 95% CI=0.263) and those arriving late (mean satisfaction score=4.83, 95% CI=0.212) (Fig. 1). There was also a significant difference ( $p=0.0034$ ) with the mean total time spent in the clinic between patients arriving early (mean time in clinic=81.91 min, 95% CI=10.52) and those arriving late (mean time in clinic=57.43 min, 95% CI=9.82) (Fig. 2).

## 4. Discussion

The results of this study show that patients who arrived late had shorter wait times and, not surprisingly, were more satisfied with the

**Table 1**  
Summary of survey.

| Questions: How satisfied are you with... | <i>n</i>        | Very dissatisfied, <i>n</i> (%) | Dissatisfied, <i>n</i> (%) | Satisfied, <i>n</i> (%) | Mostly satisfied, <i>n</i> (%) | Very satisfied, <i>n</i> (%) |
|--|-----------------|---------------------------------|----------------------------|-------------------------|--------------------------------|------------------------------|
| your appointment time?                   | 143             | 2(1.4)                          | 4(2.8)                     | 32(22.4)                | 15(10.5)                       | 90(62.9)                     |
| time waiting in wait room lobby?         | 153             | 7(4.6)                          | 16(10.5)                   | 32(20.9)                | 21(13.7)                       | 77(50.3)                     |
| time at nursing triage station?          | 153             | 1(0.7)                          | 1(0.7)                     | 38(24.8)                | 18(11.8)                       | 95(62.1)                     |
| time waiting for physician in exam room? | 150             | 0                               | 6(4.0)                     | 26(17.3)                | 22(14.7)                       | 96(64.0)                     |
| length of time with physician?           | 153             | 0                               | 1(0.7)                     | 22(14.4)                | 18(11.8)                       | 112(73.2)                    |
| length of total visit?                   | 150             | 3(2.0)                          | 2(1.3)                     | 28(18.7)                | 11(7.3)                        | 106(70.7)                    |
| <b>Areas of clinic with waits</b>        | <b><i>n</i></b> | <b>Mean wait time (min)</b>     | <b>SD (min)</b>            | <b>Median (min)</b>     | <b>Range (min)</b>             |                              |
| Wait Room Lobby                          | 166             | 31.77                           | 26.22                      | 23.00                   | 2–152                          |                              |
| Nurse Triage                             | 165             | 4.94                            | 3.27                       | 5.00                    | 0–16                           |                              |
| Exam Room                                | 163             | 14.94                           | 12.62                      | 11.00                   | 0–65                           |                              |
| Examination Time                         | 162             | 14.97                           | 9.86                       | 13.00                   | 1–65                           |                              |
| Total Time in Clinic                     | 161             | 71.58                           | 34.78                      | 65.00                   | 8–166                          |                              |

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