Check-In Analysis
Northville Health Center
University of Michigan Health System

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Program and Operations Analysis
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Executive Summary

In response to increasing complaints from patients, providers, and staff at the Northville Health Center (NVI), Kathleen Krone, the former Administrative Manager at NVI, initially requested an analysis of the check-in process. It was hypothesized that the problems with NVI’s check-in process were directly related to factors contained within.

The objective of the analysis was to identify current bottlenecks in the check-in process, minimize check-in time, maximize provider utilization, and reduce patient wait time. Observations, interviews, and time studies were conducted at NVI to analyze these issues. Observations and interviews were also conducted at the University of Michigan Cancer Center to compare and contrast the data collected at NVI.

From the data obtained through the check-in analysis, it was determined that external factors greatly affected the check-in process. These factors contributed to longer check-in times, which initiated other problems such as increased patient wait time and increased provider idle time.

It was discovered that internal factors such as patients forgetting to leave or bring a blue hospital registration card and patient charts not being present at the time of check-in also affected the total check-in time. If a patient did not bring their blue card and if a patient’s chart was unavailable, an increase in total check-in time will result. All these factors needed to be controlled to help minimize total check-in time and limit overall variability in the check-in process.

The results for total check-in times varied for new and return visit patients. This was due to the inefficient procedure of checking-in new and return visit patients at the same area. This procedure contributed to increased waiting time for later patients if a check-in clerk was registering a new patient. Since registering a new patient requires on the average 8 minutes and 20 seconds, the check-in clerk is occupied during this duration with the new patient. All return visit patients who come in while a new patient is being registered will have to wait until after the check-in clerk is finished registering the new patient.

In order to minimize total check-in time and limit the variability in the check-in process, several opportunities for improvement were identified. They include the following:

- Relocate new patient registration and insurance/address updates to a separate area
- Complete the majority of the check-in work the day before the patient’s appointment
- Duplicate patient blue cards and store it in patient charts
- Implement a sign-out system for patient charts
- Use a redesigned patient sign-in sheet
- Stagger appointment times by five minutes
- Set guidelines by NVI Administration for patients who arrive late for their appointments
1.0 Introduction and Background

1.1 Purpose and Objectives
The purpose of this project was to analyze and streamline the current check-in process at the Northville Health Center. NVI is a satellite clinic of the University of Michigan Health Center located in Northville, Michigan. It is an outpatient primary care clinic specializing in internal medicine, obstetrics/gynecology, and pediatrics. There are currently seven health care providers and six clerical staff members employed at the facility. The providers often experienced idle time while patients wait to be checked-in upon arrival to the clinic. Variation within the check-in process had been identified as the primary cause. The objectives of this project were to identify current bottlenecks in the check-in process, minimize check-in time, maximize provider utilization, and reduce patient wait time.

1.2 Scope
The scope of this project focused on implementing an improved check-in process for return patients at NVI. However, other related areas that affected the check-in process such as the new patient registration process and the check-out process were also investigated. The affected parties covered by this project were NVI patients, NVI providers, and other NVI staff. The parties involved were Dr. Susan Engert who is a Pediatrician and also the Medical Director at NVI, Kandy Buckland who is the Staffing Manager, NVI clerical staff, and the Program and Operations Analysis Department.

1.3 Approach and Methodology
The focus of this project involved performing the following tasks:

- Conducted a literature search on related problems and analyses
- Observed the check-in process at the Northville Clinic and developed a current-state flowchart (Appendix A) of the individual tasks within the process
- Interviewed the clinic staff to determine their views of the clinic and its current operations (Appendix B)
- Developed a data collection form (Appendix C) completed by the project staff during a patient’s check-in
- Benchmarked the University of Michigan Cancer Center (UMCC) check-in process through observations and interviews with key staff
- Completed a data analysis to determine average return patient check-in time and the variability involved
- Made recommendations based on the collected data from NVI, observations at the Cancer Center and the results from the literature search

1.3.1 Literature Search
A literature search was conducted at the University of Michigan’s libraries and at the Program and Operations Analysis Department to further aid in forming recommendations. This search included any previous reports and journal articles that pertained to the check-in process. The type of information obtained included recommendations for shorter patient wait times, along with recommendations for pre-registration. This information was used to reinforce the
recommendations being suggested to improve the NVI check-in process. These references are
duly noted in the bibliography.

1.3.2 Interviews with Clerical Staff
Interviews with the Northville Clinic's clerical staff were conducted to obtain an internal
perspective of the problems with the check-in process. In addition, the interviews were used to
determine some of the suggestions for improvement within the clinic. Interviews were
conducted for approximately 15 minutes over the course of one day. It was essential that the
clerical staff cooperated with the project staff and was willing to answer any questions that the
project staff had. The job roles that the clerical staff performs changes from day to day so it is
necessary for each clerk to be competent in performing each of the four job roles.

1.3.3 Time Study
Using the current-state flowchart as a guideline, the tasks were broken down into individual
tasks. This made it easier to take timings. Each data collection form followed the check-in
clerk's activities from the time when the patient signs-in to when the patient's chart is placed in
one of the two bins.

For return patients, 49 data points were collected over six different periods in the last two weeks
of October 1997. Data was gathered on Tuesdays, Thursdays and Fridays during different hours
of the day. A total of three different clerks were timed during these periods.

1.3.4 Benchmark Site
The UMCC check-in system was used as a benchmark site for this project. The check-in process
at the UMCC was observed and a flowchart was examined. This allowed for comparisons of the
check-in process between the two clinics. Interviews with key clerical staff members were also
conducted at the Cancer Center. The interviewed members include Robyn Naparaski, Team Five
Clinic Coordinator, Teresa Logerquist, UMCC Clerk, and Leigh Elliot, Infusion Clinic
Coordinator. These interviews were approximately one hour in length and were conducted on
October 29, November 5, and November 21, 1997, respectively.

2.0 Current Situation
The current check-in process (Appendix A) at the Northville Health Center begins with the
retrieval of patient charts for each patient that has an appointment scheduled for the next
workday. Patient charts are retrieved the morning before the patients' scheduled appointment.
The charts are set-aside until the morning of the patients' appointment when it is then placed in
the check-in area.

The next step in the process occurs when the patient arrives for his/her scheduled appointment.
Return patients are recommended to arrive 15 minutes prior to their appointment. Upon arrival,
the patient fills in the sign-in sheet and places their blue hospital registration card (blue card) in
the cardholder. New patients are advised to arrive to the clinic 30 minutes prior to their
appointment and are required to undergo a lengthy registration procedure at the check-in area.
The clerk removes the blue card from the holder and confirms the patient’s appointment. At this point, the clerk locates the patient’s chart that should have been “pulled” the day before. The check-in clerk then retrieves all of the appropriate forms that the patient will require for his/her visit and the appropriate billing form, also known as an encounter form. Each of the forms is stamped with the patient’s blue card and the check-in clerk fills out the patient information on the encounter form. The check-in clerk attaches the encounter form and blue card to the patient’s chart with a paper clip. The encounter form number is then written on the appointment schedule next to the patient’s name. The clerk finishes the check-in process by placing the patient’s chart in the one of the two bins, dependent on type of visit. If the patient is being seen for an internal medicine visit, the clerk must turn on the light that signals the medical assistant (MA). The MA can then retrieve the patient record from the bin. If it is a pediatric or OB/GYN visit, the MA also retrieves the patient record, but the MA will have to look at the bin to see if the chart is present, rather than relying on the light signal.

3.0 Alternatives and Hypotheses Considered

Before reaching the current recommendations regarding the check-in process at NVI, the following options were also considered:

3.1 Imprinter

This device is essentially a printer that prints out information on the encounter form. Its use relieves the check-in clerk from writing the patient’s information on the encounter form. However, an imprinter was unable to be observed in use and the resultant time saving may not be enough to justify its cost. The UMCC, which sees a greater number of patients than NVI, did not make use of an imprinter. From the observations at the UMCC, the check-in process did not seem to be hampered by not using an imprinter.

3.2 Staffing Level

Based on the interviews with the clerical staff, it was found that the clerical staffing level was a common concern. According to the NVI Administration, the minimum staffing level at NVI is four. Each member of the staff is given a specific role for each day. Examples include check-in, check-out, and filing. Clerks are rotated throughout these roles weekly. Only one clerk is designated to handle check-in at any given time. The concerns with staffing can be justified only when the check-in clerk is splitting time with another role. One clerk can complete check-in as long as the minimum staff is on duty.

3.3 Standardizing Physician Forms

Standardizing physician forms by visit type, such as internal medicine, pediatrics, and OB/GYN, was originally examined as a way to reduce overall check-in time. Using several different physician forms can be confusing and time consuming. After thoroughly examining the physician forms and the needs of the providers, a conclusion was made that the forms are standardized as much as possible.
3.4 Redesigning the Office Space
Reworking the office space surrounding the check-in clerk was an alternative considered. When the project began, NVI was reorganizing the office work area and it was uncertain how this was going to affect any changes that would have proposed. The space surrounding the check-in clerk is already quite confined and a redesign of the office space would undoubtedly create other problems. Some of these problems include safety issues and overflowing traffic areas.

4.0 Findings and Conclusions
The data collection process at NVI can be broadly broken into three main areas: observations, interviews and time studies.

4.1 Observations
During the initial observations at NVI, the check-in process functioned efficiently most of the time. However, some problems were noticed. Specific instances were when patients did not leave their blue card in the card holder upon sign-in and when patient charts were not prepared and available to the check-in clerk. Also, patients tended to arrive in waves, which extensively occupied check-in for short periods at a time. There was no double handling of items or other similar inefficiencies observed. Flowcharting the check-in process confirmed these observations.

4.2 Interviews
From interviews with the clerical staff members at NVI, the following conclusions were drawn:

- Check-in is either a clerk’s favorite job role or least favorite job role
- Clerks who like check-in enjoy the excitement
- Clerks who do not like check-in dislike the stress involved
- Check-in is the most stressful job role
- Registration of new patients is the most difficult aspect of check-in
- Current staffing levels are a major concern
- Locating misplaced patient charts consumes an excessive amount of time due to the large number of possible locations

4.3 Time Study
The quantitative data collected was based on a time study of the check-in process. The time study was performed to get a better idea of what was happening during check-in. However, it was not an in-depth analysis due to the small sample size of new and return patient data that was gathered. After analyzing the data, it was found that the mean check-in process time was one minute and 25 seconds for return patients and eight minutes and 20 seconds for new patients. Figure 1 shows that the majority of the time spent on new patient check-in was at the beginning because the clerks needed to register a new patient before proceeding with the check-in.
NVI had previously established a target time for new and return patient check-in of eight and three minutes respectively. These targets were used as a baseline in the study. The mean new patient check-in time was 20 seconds over the target of eight minutes. However, due to the small sample size, the only conclusion that may be drawn is new patient registration/check-in is a significant bottleneck. The mean return patient check-in time was well within NVI’s target. However, the outliers serve as an indication of the high variability in the process. Figure 2 illustrates the variation across the entire set of return patient data.
Figure 3 displays the distribution of return patient check-in times. Although nearly 96% of the patients were checked-in within the NVI target, variation is still evident.

**Figure 3. Distribution of Return Patient Total Check-in Time**

The analysis confirmed observations that patients not leaving their blue cards in the card holder when first signing-in and patient charts not being prepared for the check-in clerk contributed the most to the overall check-in process variability. Table 1 shows the percentage of time that patient blue cards and patient charts were available to the check-in clerk. In order to reduce variability in the check-in process, the unavailability percentages must be reduced with the goal being zero percent.

<table>
<thead>
<tr>
<th>Available to clerk</th>
<th>Unavailable to clerk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient blue card</td>
<td>83.7%</td>
</tr>
<tr>
<td>Patient chart</td>
<td>85.7%</td>
</tr>
</tbody>
</table>

**Table 1. Availability of Patient Blue Card and Patient Chart**

Figure 4 shows a comparison of mean total check-in times under different situations based on patient blue card availability. The numbers in parentheses are the numbers of patients that fell under each condition. When the patient does not leave their blue card at sign-in, the total check-in time takes, on average, over half a minute longer. Note that when a clerk needs to print a new blue card, check-in takes an average of approximately one minute and 20 seconds longer.
### Figure 4. Total Mean Check-in Time Based on Blue Card Availability

Figure 5 illustrates a comparison of mean total check-in times under different situations based on patient chart availability. When a patient chart is not present, check-in takes approximately 15 seconds longer.

### Figure 5. Total Mean Check-in Time Based on Chart Availability
An external factor that affected check-in was when patients arrived relative to their scheduled appointment time. During the observations it was noted that patients tended to arrive in waves, which was proven by the data. Based on a sample of 41 data points, the mean patient arrival time was four minutes and 36 seconds prior to the scheduled appointment time. NVI currently recommends that return patients arrive 15 minutes prior to their appointment time and that new patients arrive 30 minutes prior to their appointment. Only 17 percent of return patients sampled followed the 15 minute recommendation. Figure 6 displays the distribution of return patient arrival times versus appointment time.

The primary finding from UMCC, the benchmark site, was that most of the work associated with check-in was done the day before. This resulted in a reduction in time required for the actual check-in process on the day of the appointment and also less or no variability after the patient has arrived for his/her appointment.

Based on the data and information from NVI and the Cancer Center, shifting check-in job tasks to the day prior to the appointment is the best way to reduce variability. The time spent on check-in after the patient arrives will be greatly reduced. Also, patient arrivals need to be dispersed to minimize backup at check-in. Moving new patient registration away from check-in will also minimize backup due to the lengthy amount of time involved. This will ensure that patient wait times will not increase.
5.0 Recommendations

In order to achieve the goals of the return patient check-in analysis at the Northville Health Center, the following recommendations have been made:

- Relocate new patient registration and insurance/address updates to a separate area
- Perform the majority of the check-in work the day before the patient’s appointment
- Duplicate patient blue cards and store it in patient charts
- Implement a sign-out system for patient charts (Appendix D)
- Use a redesigned patient sign-in sheet (Appendix E)
- Stagger appointment times by five minutes
- NVI Administration should establish guidelines for late patients

5.1 Relocation of New Patient Registration

At the start of the project new patient registration and return patient check-in were located at the front desk area. This caused a backup if a return patient signed-in while the check-in clerk was tending to a new patient. The procedure for getting new patients registered is very time consuming, and thus the return patient has to wait until the clerk is finished registering the new patient before being checked-in. The same scenario occurs if a patient has to update their insurance or address. This task also requires extra time from the check-in clerk, and thus, a return patient will again have to wait to be checked in. It is recommended that new patient registration be moved to a separate area away from the front desk. This will remove the tasks involved with new patient registration from the check-in clerk’s responsibilities. By relocating new patient registration, the queues that form at the front desk will be reduced.

Insurance/address updates should be encompassed into the new patient registration area. The responsibilities of new patient registration and address/insurance updates should be given to either the roamer or the filing clerk. Separation of new patient registration will also give more privacy to patients during registration, which removes concerns regarding patient privacy issues. NVI has already implemented this recommendation and has found it to be effective.

5.2 Preadmission and Blue Cards

Based on observations and interviews at UMCC, implementing a preadmission process is recommended. This process includes retrieving patient charts, and pulling and stamping all forms the day prior to the appointment. By shifting appropriate check-in job tasks to the day prior to a patient’s appointment, variability that currently occurs at check-in will be greatly reduced. Shifting certain job tasks guarantees that patient charts and forms will be completed when the patient arrives. The preadmission process does increase the amount of work done the day before but decreases the number of tasks that need to be completed while the patient is waiting. The check-in clerk will only have to verify the appointment and place the patient chart in the bin. This will reduce the amount of time a patient waits to be checked in.

A task related to this is the printing and storage of a duplicate patient blue card. There are two reasons for duplicating blue cards. First, a duplicate blue card will allow clerks to stamp all forms the day before. Second, a duplicate blue card ensures that a backup blue card is available in case a patient forgets to leave his/her blue card in the holder. However, it should be reiterated that patients are still required to bring their blue card. Duplicating a blue card does not replace
the need for a patient to bring their card. It only eliminates the need to reprint one while the patient is waiting.

5.3 Sign-Out System
A sign-out system for patient charts will allow for easier retrieval of patient charts not in the file area. This system is currently being used at the UMCC and has been found effective. It is believed that since there are fewer providers at NVI, the system will be more successful than at the UMCC. By using the sign-out sheet as a first reference point, a check-in clerk will know if one of the providers has a particular patient’s chart or if none of them have it. This will reduce the time necessary for a check-in clerk to locate the chart. The clerk can locate the chart during the preadmission process and will not need to search for the chart while the patient is waiting. This also eliminates a possible location that a lost chart could be.

5.4 Redesigned Patient Sign-in
The redesigned patient sign-in sheet includes a space for the patient to indicate whether or not they brought their blue card. This forces the patient to search for their blue card at the check-in counter rather than requiring the check-in clerk to call the patient back up to the counter to ask for it. This will also alleviate the number of times the check-in clerk must ask patients for their blue card.

5.5 Staggered Appointments
Patient appointments are currently scheduled every 15 minutes beginning at the top of the hour. This follows the “fixed wave” concept of scheduling. The “fixed wave” concept schedules several patients to arrive at the same time. When several patients arrive at once, the check-in clerk becomes backed up and patients are forced to wait. Staggering stated appointment times by five minutes prior to the actual appointment time will help to ensure that patients will be ready to see their provider at the actual appointment time. This also eliminates several patients arriving at once. For example, a patient would be scheduled to arrive at 10:20. The next patient should be scheduled at 10:25. This is similar to the “modified wave” scheduling concept (Chesnaw, 1997) in which patient appointment times are staggered based on estimated length of appointment. From prior research, it has been observed that patients are more likely to arrive on time when appointments are not at common time divisions. Examples of these are 10:15, 10:30, and 10:45.

5.6 Late Patient Guidelines
NVI Administration needs to set guidelines regarding late arriving patients. Currently, late patients are seen based on a particular provider’s preferences. The check-in clerk must locate the specific provider that the patient is scheduled to see and ask if they are willing to see the patient. By setting up guidelines, the check-in clerk will not have to leave his/her station to locate the provider. The check-in clerk can simply follow the guidelines that have been established.
6.0 Implementation Plan

In order to proceed with an effective implementation, it will be necessary to allocate extra work hours to a clerk. This clerk will be responsible for coming in early to assist the designated check-in clerk with pre-admission. The allocation of extra work hours is not permanent. It only serves to ease the transition from the current check-in process to the recommended process. Refer to Appendix F for a flowchart of this plan.

6.1 Implementing Pre-admission

Clear sleeves to hold blue cards need to be purchased before implementation can begin. Plastic sleeves like the UM Health Center ID holders can be purchased from the W.T. Beresford Co. in Southfield, MI for $0.30 per unit in orders of 1000 units.

- Print off appointment schedule for following day
- Retrieve charts of patients that are scheduled for appointment
  - If clear sleeve and blue card are not present
    - Print off new blue card
    - Staple clear sleeve to file
- Pull all provider forms and encounter form appropriate to patient’s visit type
- Fill in the appropriate patient information on each form
- Stamp each form with blue card
- Place forms in the chart
- Place blue card in clear sleeve

6.2 Implementing Patient Record Sign-Out System

A space for a clipboard (to hold sign-out forms) and a return box or basket needs to be located in the records area before this can proceed.

Instructions for removing a chart from the records area

When a chart is taken from records area:

- Provider must fill in the sign-out sheet for each record taken

Information to be filled in:

- The chart’s record number
- Provider’s name
- The date that the chart was taken
When a chart is returned to the designated area, the provider must:

- Fill in the date the chart was returned
- Place a check-mark in the returned box
Bibliography


Appendices
Appendix A
Northville Health Center Check-In Process Flow (Current-State)

Start

Prepare chart the day before patient appointment

Patient arrives, signs in and takes a seat in the waiting area

Check-in clerk confirms appointment with schedule and takes card from slot

Did patient leave blue card in slot?

Yes .837

Mean = 10.29
SD = 12.31
Count = 48

Check-in clerk pulls patient's chart

Is chart present?

Yes .857

1

No .163

Does patient have blue card?

Yes .625

Patient hands card to clerk

Mean = 88.83
SD = 16.27
Count = 5

Mean = 6.63
SD = 4.96
Count = 49

No .375

Check-in clerk prints new blue card

Mean = 163.29
SD = 41.94
Count = 3
Appendix A

1. Check-in clerk prepares encounter form

Mean = 19.61
SD = 12.15
Count = 49

2. Check-in clerk writes encounter form number on schedule

Mean = 13.20
SD = 10.38
Count = 49

3. Check-in clerk pulls appropriate form(s) for specific provider

4. Check-in clerk stamps all forms with blue card

Mean = 13.94
SD = 19.07
Count = 49

5. Check-in clerk attaches encounter form and blue card to chart

6. Was patient late for appointment?

No

.980

Yes

.020

7. Check-in clerk writes time of appointment and patient arrival time next to name on schedule and encounter form

Mean = 10.00
SD = 0
Count = 1

8. Check-in clerk puts patient chart in bin

Mean = 15.51
SD = 11.99
Count = 49

9. Check-in clerk turns on light on IM side
Appendix B

Interview Questions

Name:

What job role do you enjoy the most?

What job role do you enjoy the least?

What aspects of the check-in process are the most difficult?

What aspects of the check-in process are the most time-consuming?

What problems have you experienced while working check-in?

If you could change one thing what would it be?

Additional comments/suggestions:
## Appendix C
### Northville Health Center
#### Check-In

**Patient Name:** ____________________________  
**Date:** ____________________________  
**Appointment Time:** ____________________________  
**Arrival Time:** ____________________________  
**Check-in Clerk:** ____________________________  
**Provider:**  
- [ ] Dr. Patel  
- [ ] Dr. Turgeon  
- [ ] Dr. Kopicki  
- [ ] Dr. Weintraub  
- [ ] Dr. Heisler  
- [ ] Dr. Engert  
- [ ] Kate Maddox  
- [ ] Nurse  

**Type of visit:**  
- [ ] IM  
- [ ] OB/GYN  
- [ ] PEDS

<table>
<thead>
<tr>
<th>Sequence</th>
<th>Clerk Activity</th>
<th>Start Time</th>
<th>End Time</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Clerk confirms appointment on schedule</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clerk removes blue card from card holder</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
|          | Did patient leave blue card?  
- [ ] Yes  
- [ ] No |            |          |          |
|          | If no then:  
- [ ] patient finds card on person  
- [ ] clerk prints new card |            |          |          |
|          | Clerk pulls patient chart  
Was chart present?  
- [ ] Yes  
- [ ] No |            |          |          |
|          | Clerk pulls appropriate forms for visit type |            |          |          |
|          | Clerk stamps all forms with blue card |            |          |          |
|          | Clerk prepares encounter form  
Clerk writes encounter form number on schedule |            |          |          |
|          | Clerk attaches encounter form and blue card to chart |            |          |          |
|          | If late, clerk writes time of appointment and patient arrival time next to name on schedule and encounter form |            |          |          |
|          | Clerk puts chart in bin  
If on IM side, clerk turns on light |            |          |          |

Data Collection Sheet v2.0  
12/4/97
<table>
<thead>
<tr>
<th>PROVIDER NAME</th>
<th>CHART NUMBER</th>
<th>DATE TAKEN</th>
<th>DATE RETURNED</th>
<th>RETURNED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E

PLEASE SIGN IN, PLACE YOUR
BLUE HOSPITAL REGISTRATION CARD IN THE HOLDER
AND BE SEATED. THANK YOU.

<table>
<thead>
<tr>
<th>PATIENT NAME</th>
<th>DOCTOR'S NAME</th>
<th>APPT. TIME</th>
<th>ARRIVAL TIME</th>
<th>Address / Insurance Changes?</th>
<th>Is Blue Card in Holder?</th>
<th>OFFICE USE ONLY</th>
</tr>
</thead>
</table>
Appendix F
Implementation Plan Flowchart

- Print off appointment schedule for following day
- Retrieve charts of patients that are scheduled for appointments
- Is chart in records area?
  - Yes
  - Pull all provider forms and encounter form appropriate to patient's visit type
  - Fill out forms
  - Stamp forms
  - Place forms in the chart
  - Does chart have duplicate blue card?
    - Yes
    - Reference provider sign-out sheet
    - Locate chart in clinic
    - No
    - Print duplicate blue card
    - Staple clear sleeve to file
    - Place blue card in clear sleeve
- No
Northville Health Center

Check-In Analysis

Program and Operations Analysis

December 5, 1997

Bernard Lee
Andrew Lum
Lyman Ng

Overview

• Project Staff Background
• Introduction and Background
• Approach and Methodology
• Alternatives Considered
• Findings and Conclusion
• Recommendations
• Implementation Plan

Project Staff

• University of Michigan Engineering Students
• Practicum in Hospital Systems (4 — Senior project)

Introduction and Background

• Problem
— Check-in process identified as bottleneck
— Providers experience idle periods

• Purpose
— Analyze and streamline check-in process

• Objectives
— Minimize check-in time
— Maximize provider utilization

Introduction and Background (cont.)

• Objectives (cont.)
— Identify current bottlenecks
— Minimize check-in time
— Maximize provider utilization

Project Staff Background

• University of Michigan Engineering Students
• Practicum in Hospital Systems (4 — Senior project)