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A Xerox Company

Patient Readmission Risk Reduction

December 2015 & January 2016 Field Studies Summary

+ Introduction

Ethnography is an investigative technique used to add context and insight to the product development process: discover what people actually and how they feel while doing it, by immersing oneself in the world of the subject.

Many times there is a departure from what people say they do and what people actually do. The only way we would know that is through observation. Asking people about their behavior is not a reliable technique. People might not even be aware of behaving in a certain way or even deliberately fib for various reasons, such as to hide embarrassment.

Also, people often have needs that are unarticulated, that one isn't even aware of having. Through attentive observation it is possible to unveil these needs and ultimately transformed them into useful, innovative solutions. Once pointed out, these needs often seem blindingly obvious, but until then simply haven't been consciously articulated. It takes attentive observation to do so.

+ Goal

Ethnography is applied in the first stages of a product development process to explore concepts for new products, find business opportunities and opportunities for technological development, expose pain points, frustrations, behavior patterns to create better products.

In the context of reducing patient readmissions, our task is observing patients in their hospital and home environments to identify problems or undesirable phenomena —such as misunderstandings that lead to unexpected and potentially harmful outcomes—that could potentially be fixed by procedural changes or the introduction of new tools.

+ Goshen, Indiana

198,214 Up 8.4%
Population

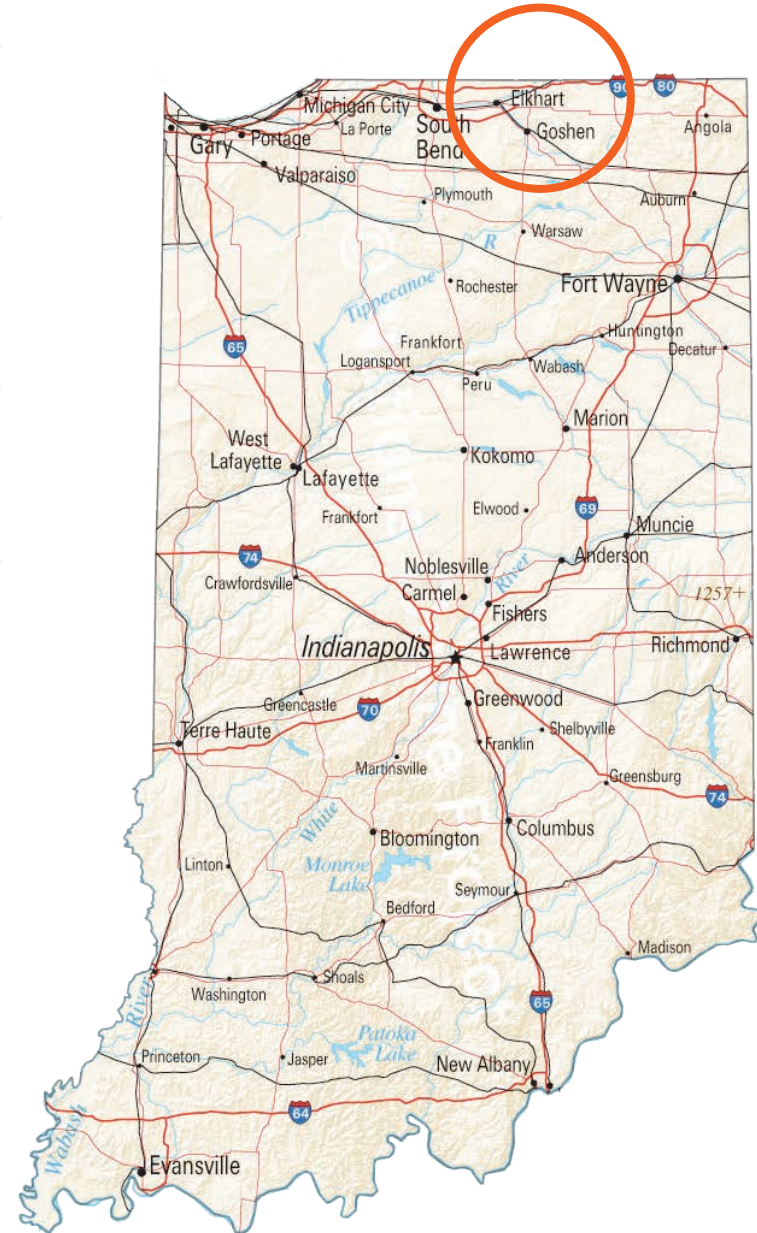
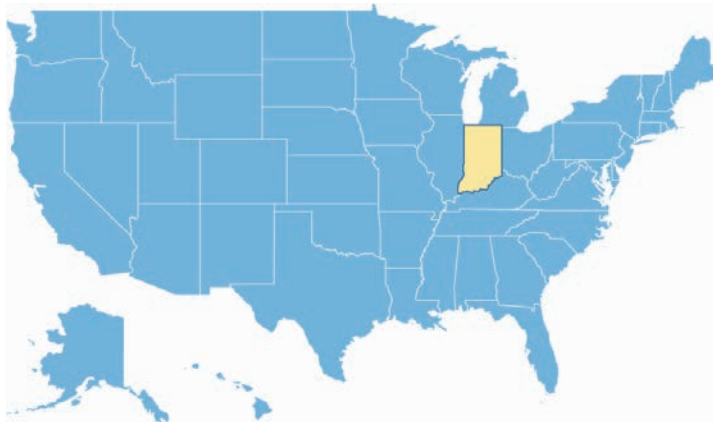
34.8
Median Age

55.5%
Married Population

2.77
Household Size

5.0%
Unemployment Rate

\$109,900
Median Home Price



+ IU Goshen Hospital



IU Goshen Hospital is an Indiana University (IU) affiliated not-for-profit, academic health center.

**General Medical and Surgical Hospital
Center for Cancer Care
Heart & Vascular Center
Orthopedics & Sports Medicine
Family Medicine
Specialty Physician Practices**

Non-profit

122 Beds

340 Full-time RN's

33,469 ER patients

6,239 Admissions.

2,692 inpatient surgeries.

3,801 outpatient surgeries.

Accepts Medicare, Medicaid

+ In-Hospital Room Interviews with 13 Patients

December 7-11, 2015



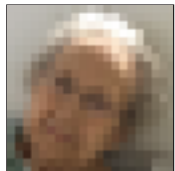
Bob, 79
*Purchasing
Manager*



Kim, 57
*Student
(Disabled)*



Scott, 45
*Police Officer
(Disabled)*



Jean, 92
*Retired
Housewife*



Virgil, 45
*Handyman
(Disabled)*



Female, 78
*Retired Office
Administrator*



Male, 48
*Construction
Worker*



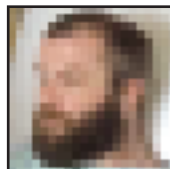
Shirley, 45
Custodian



Steven, 49
Craftsman



Male, 78
Farmer



Josh, 34
*Factory
Technician*



Hartmuth, 89
Retired



Joe, 68
Store Clerk

+ Patient Illnesses

Our study had no restrictions as to illness type, notwithstanding the Centers for Medicare & Medicaid Services' guideline of tracking readmissions for patients aged 45 to 64 and suffering 1 of 5 disease types. The goal of the study was to observe and report on behavior of any patient, no matter the age or illness to ensure a large sample in a limited amount of time.

Of the thirteen patients, there were no overlapping illnesses and a diverse range of ages:



Hip replacement



Cyst removal



Degenerative disc disease



Heart failure-chest pain



Diabetes + complications



Irregular heartbeat



Broken ribs



COPD



Carotid artery blockage



Stroke



Irregular heart beat



Kidney stone



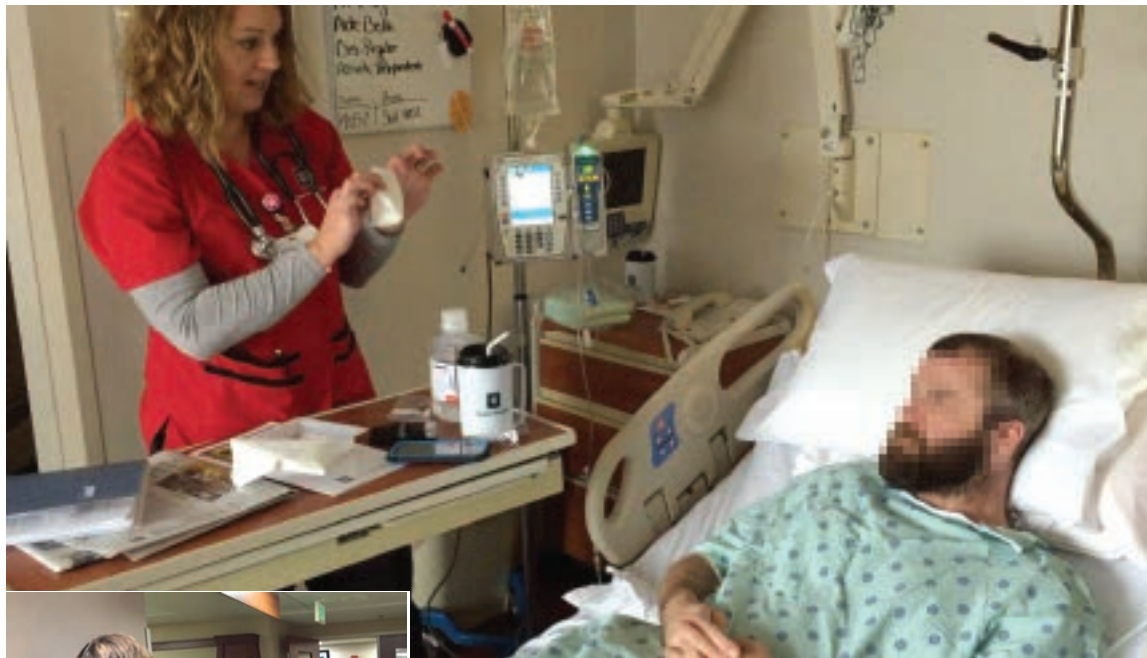
Pneumonia

The CMS Readmission Reduction Plan apply to five illness as of 2016:

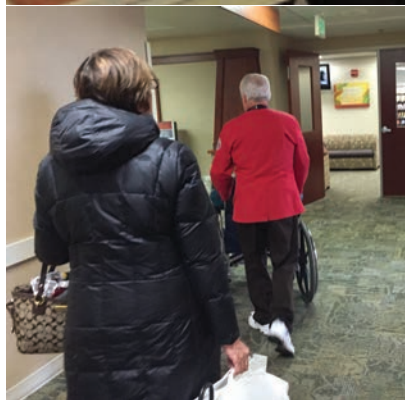
1. Heart failure
2. Acute myocardial infarction (AMI)
3. Pneumonia
4. Chronic obstructive pulmonary disease (COPD)
5. Total hip/knee (THA/THK) arthroplasty

+ Nurse and Care Coordinator Arranged Interviews

- 3-4 Interviews per day, just prior and during discharge.
- 9 Agreed to follow-up interviews within 30 days.



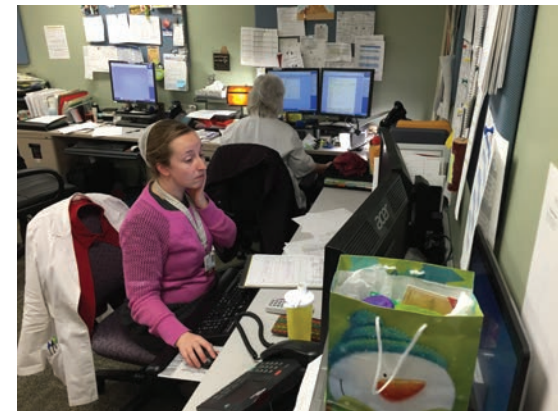
A nurse gives a patient discharge instructions on changing the dressing for a wound.



Patient and wife being escorted by hospital volunteer to the exit following discharge.



Care coordinator checks availability of a bed in a care facility for a patient without family to assist in a home recovery.



The care coordinator office space in the basement of Goshen Hospital. Roughly 12 people work in this space.



Care coordinators (white coat) track patient recovery and are part of the approval chain governing which patients can be discharged.

+ Becoming Acquainted

Patients' ages ranged from 34 to 92.

On a socioeconomic scale, patients are of the low end: high-school equivalent education (1 of 13 attended college); low to below poverty income; average to below average health.

Employed patients held blue-collar jobs, with the exception of one who held a white-collar office job.

4 patients had HRRP-related illnesses

Of the admitted patients, 2 had returned within 30 days of their last visit with avoidable related illnesses:

- *Could not get prescription refilled*
- *Wrong size hip joint / hip fracture*

Admissions	Of 13 Patients
Scheduled (procedure)	2
Emergency	10
Readmitted	2
<i>Readmitted with related illness</i>	2
<i>Readmitted and avoidable</i>	2

Health Insurance Coverage

Have insurance	12
<i>Medicare or Medicaid</i>	10
<i>Employment-based</i>	2

Employment Status

Retired	5
Employed	5
<i>Employed, disabled</i>	2
Unemployed	3
<i>Unemployaed, disabled</i>	3

+ Patient Conditions

8 patients had chronic conditions limiting daily activities, some of which resulted in their hospital stay.

Some patients appeared to lack the ready knowledge (and/or possibly the commitment) needed to significantly improve their recovery and possibly prevent a recurrence of their ailment. These patients each had unplanned stays at the hospital.

Some had little or no understanding of the condition that led to their hospital stay. Of these, just one appeared strongly motivated to understand and overcome their condition.

Other patients were able to articulately describe their condition though not necessarily the factors that caused it.



+ Candidates For The App

10 patients had mobile phones. Of those, 5 were smartphones (1 iOS and 4 Android). 1 patient had a wifi tablet (Android).

7 appeared to be good candidates for our app study (though some would need us to provide smartphones):

- *Motivated to understand their illness, whether or not they owned smartphones.*
- *Were already smartphone literate, accustomed to using apps.*
- *Had family members –effectively, caregivers during home recovery, with smartphones who were willing to help them use the app.*
- *Were already doing some form of tracking or alerting, on paper or on regular flip-phones.*
- *One patient did not have a mobile phone –now or in the past– but was eager to learn more about his condition and improve his health.*



Virgil, disabled by back pain, crawled from his house to his pickup, somehow drove the twelve miles to Goshen, then crawled into the emergency room.



Habitually feeling chest pain. Steve visited doctors until finding one who detected an irregular heartbeat. 158 bpm. He was immediately sent to Goshen Hospital.

+ Discharge Instructions

Prescription medications most often posed challenges:

- *Simply remembering to take medication and keeping to a schedule.*
- *Trying different drugs until a side-effect free treatment was found.*
- *Resolving miscommunications between patient, nurse and doctor regarding which medications were to be taken.*

On one occasion, the nurse gave the patient stale discharge instructions not knowing the doctor had revised the medication instructions.

None of the patients accurately recalled their discharge instructions (without reading them) shortly after hearing the nurse explain them.

Prescriptions	Of 13 Patients
Pre-existing_____	10
New medication(s)_____	9
Medical device_____	4
Physical therapy_____	3

Living Situation	
With spouse, family_____	12
Alone_____	1

Recovery Period	
Care facility_____	1
Home_____	12
Home with care nurse_____	2

Discharge Instructions	
Family / friend participation_____	6
Social worker consultation_____	1

+ Preparations for Discharge

Bob (hip replacement), replaced his garage stairs with a wheelchair ramp; after returning home, hired a handyman to install a bathtub grab bar and bath stool.

Four of seven lived with family whom they relied on for help during recovery for things such as meals, taking medication, errands and transportation.

Josh, cyst removal, required regular visits by a nurse (for special wound care).

Hartmuth's daughter, knowing her dad would need care after his surgery, rented a motor home in her neighborhood where her parents could stay. It was within walking distance –close enough to spend each day with them.



+ 30 Days After Discharge: Follow-ups with 7 Patients January 20-23, 2016

- Within a 30-mile radius of Goshen Hospital.
- In homes, cafes, places for work; one by telephone.



Josh shows his wound-vacuum device from his home in Branson, Michigan.



Harmuth from his easy chair in Syracuse.

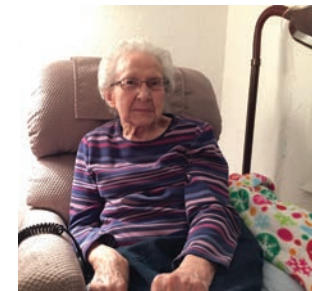
Virgil at Goshen Hospital just after his first physical therapy appointment.



Bob, outside his office in Elkhart on his first day back at work.



Kim during her initial stay for pneumonia. We later followed-up by telephone.



Jean at home in Ligonier.



Shirley, at her favorite cafe across the street from her apartment in Nappanee.

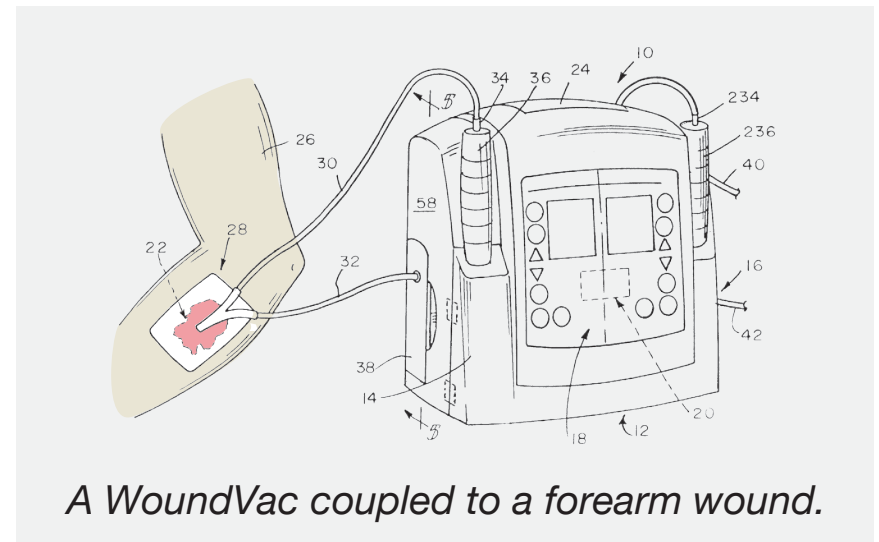
+ Revisiting Discharge Timing

Without exception, patients felt their discharge came at the appropriate time and this discharge decision was made jointly by them and their doctor. Furthermore, patients described an atmosphere which did not require them to always agree with doctors' decisions. Patients nonetheless also expressed reservations:

- Bob (hip replacement), expressed regret for not staying at his care facility for an additional week of physical therapy; he realized he still lacked the strength and stamina to be self-sufficient.*
- Kim realized that at following discharge, she had a poor understanding of what may have led to her pneumonia, and how to care for herself at home. She felt the nurses were pressed for time and the atmosphere not conducive to asking questions for clarification. At the same time, she reports having felt disoriented. Kim was unaccompanied during instructions.*

The day after discharge, Josh (cyst removal) was rushed to Goshen Hospital because his wound ruptured and he began bleeding explosively.

12 days later, after excessive excretions from his wound, Josh was prescribed a portable device to capture fluid-discharges from his wound and promote healing.



+ Medication Management

Taking prescription medications continued to be a challenge for patients. Each described an approach to minimize mistakes.

- *Trying different drugs until a side-effect free treatment was found.*
- *Resolving communications between patient, surgeon, doctor and doctor's nurse regarding which pre-existing medications were not to be taken and when they could be resumed.*
- *Some patients created a charts on a paper to schedule when to take medications. For one patient who was taking 17 different medications altogether this helped to remember specific times and doses for each medication.*
- *Tapering on and off of medications was a common challenge: keeping track of doses (one half tablet twice a day -every 12 hours for 2 days; then one half tablet three times a day for 3 days; then a full tablet...*
- *Sticking to a medication regimen was not always convenient to people's daily routines. Kim found it difficult to keep up with the schedule for one particular drug –“taking it every four hours kind of makes it hard to sleep”. She ended up taking this drug in a haphazard way: at different intervals or not at all in some cases.*
- *One particularly determined patient took diligent measures, programming the calendar feature of his Nokia candybar WAP phone (with its multi-press style interface for each letter on a tiny monochrome screen) to beep at scheduled times.*

+ Patient Acknowledgement

Repeated by nearly every patient was how appreciative and uplifted they were by unexpected interactions with the variety healthcare workers they'd come into contact with since being discharged.

- *Almost all patients received at least one call from Goshen Hospital checking on their condition and if they had questions. One patient had such calls from his health insurance provider.*
- *Bob's hip surgeon visited him at his care facility every day for the 4 weeks he was there.*
- *Kim's primary doctor assigned her a device that took her vitals several times a day reported back to him the results. As events took place, a nurse would address them by phone or in person on her next visit. An instance that struck Kim, the immediate reaction and care when her weight dropped dramatically one day the next.*
- *One patient's primary doctor called her to make sure she'd scheduled an appointment with her cardiologist and later to confirm that she attended the appointment.*



Kim's remote monitoring tablet with bluetooth connected peripherals (fingertip oximeter, scale, blood pressure cuff).

+ Recommendations

Anticipate events specific to each patient and address them.

- Convey warmth, understanding, and above all respect.
- Pay attention to detail
- Users should believe the app knows what will resonate with them before they know themselves.
 - *“Did you miss a medication? Don’t panic. Resume your medication schedule as planned. Avoid compensating with an extra dose. It may effect you adversely.”*
 - *“Would you like to be reminded at a different time?”*
 - *“Would you like an extra reminder?”*

Provide reactive experience contextual to patients’ specific illness(s)

- Take into account patient history (e.g. pre-existing meds or conditions)
- Reasons for doing things (med every 4 hours because...)
- Consequences (positive or negative) for taking/missing an action
- Recovery situation (e.g. living alone or nurse visit once a week)

Affirm and empathasize

- Provide recognition for efforts or sufferings
- Show that someone cares.
- Offer simple incentives or rewards (e.g. “gold star”)

Keep track of progress / regress

- Report changes in condition –how well or poorly the recovery is going.



THANK YOU

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