



Testing Emergency Department Improvements with Simulation – A Quality Improvement Perspective

Presented by: Amanda D. Peterson & Raul Medina
Lean/Process Improvement Coordinators
Vidant Duplin Hospital, Kenansville, North Carolina

Background: Vidant Duplin Hospital

Vidant Health

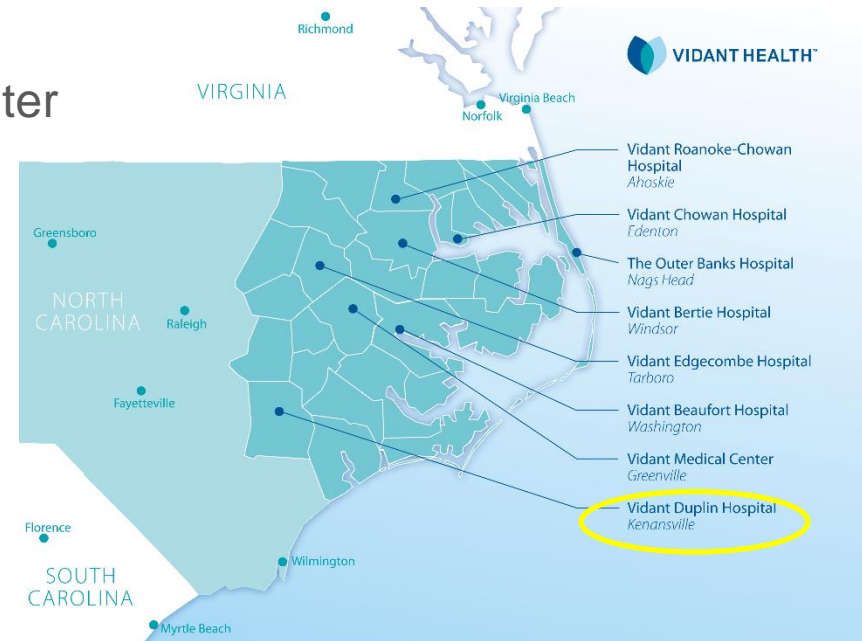
System details:

- Eastern North Carolina
- One large academic medical center
- Seven community hospitals

Vidant Duplin Hospital

Hospital details:

- Rural, large agriculture focus
- Population, est. 58,505
- Licensed for 81 beds





Implementing a Pharmacy Technician into the Emergency Department for Collecting Medication Histories

Prepared by: Amanda D. Peterson, MS, RDN, LDN
Lean Coordinator
Vidant Duplin Hospital

Current Problem / Key Question to Answer

What was the motivation for the project?

- Currently, Emergency Department nurses obtain patient's medication history
- Local observations suggest variation in medication reconciliation processes
- Research suggests that >40% medication errors are due to inaccurate medication histories

What were you trying to learn?

- Investigating the feasibility of integrating a pharmacy technician into the Emergency Department to aid in collecting accurate information via scripted patient interviews.

Process Details

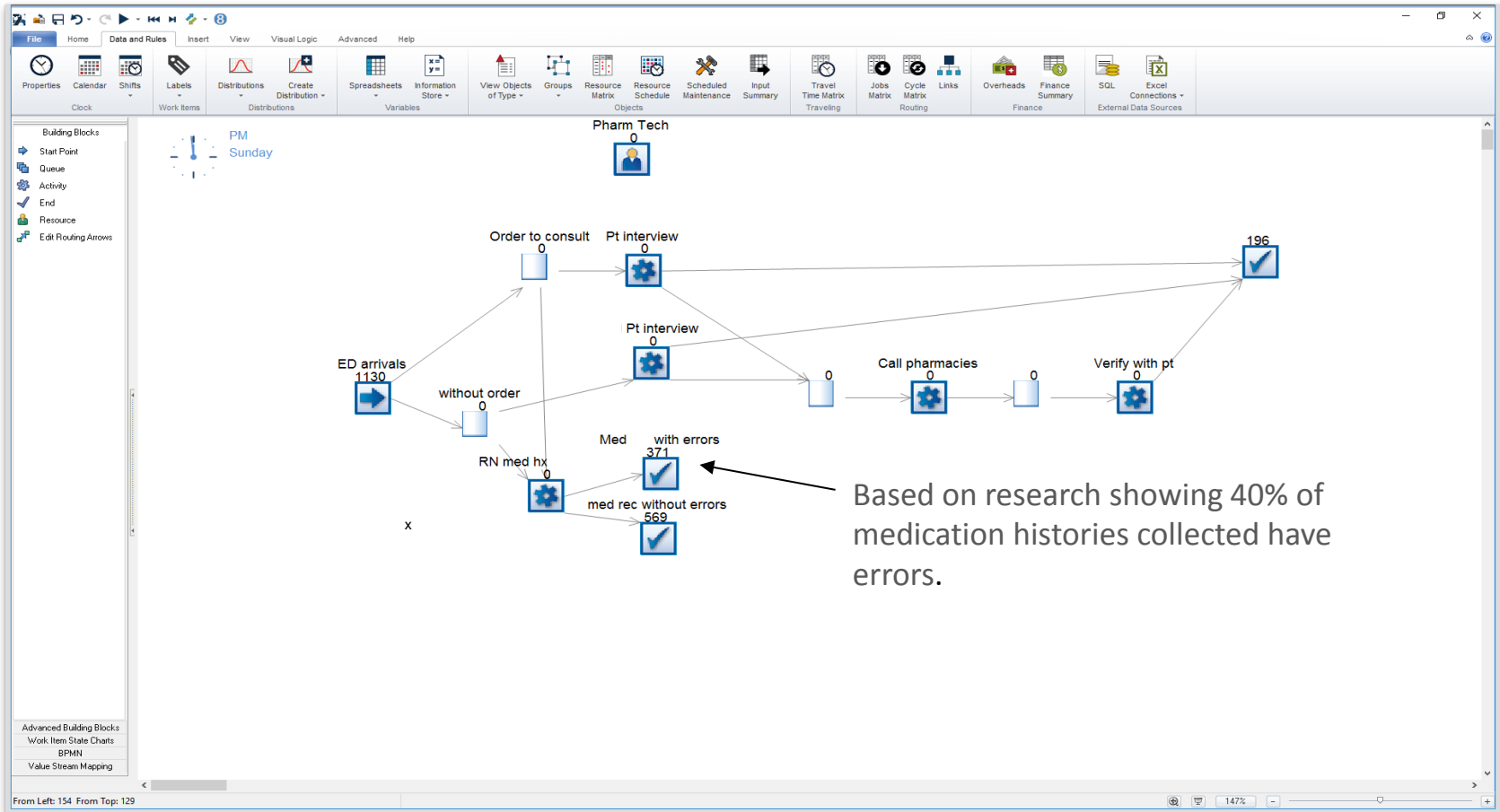
Department: Emergency

Process Description: Scripted patient interviews for collecting medication history

Major Steps:

1. Pull medication data from reconciliation software
2. Conduct patient interview to obtain medication history
3. Contact pharmacy to verify high-risk/high-alert medications
4. Verify information with patient
5. Mark medication history complete

Simulation Model



Results / Key Findings

Pharmacy technician

- Peak ED hours: 3:00-11:00pm
- Working hours: 2:30pm to 11:00pm, Monday-Sunday
- Collects approx. 14 medication histories/day
 - 10 admission consults/day
 - 4 without orders to consult
- Collects approx. 14 medication histories/day
- Scripted patient interviews → more comprehensive, require more time with the patient for accuracy
- Nurse collects medication if Pharmacy Technician is busy

Next Steps

How are you going to share the results with others?

- Hospital Executives and senior leadership
- Emergency Department and Pharmacy staff
- Share with other rural hospitals and across health system
- Support a project justification for grant-funding

How are you going to roll out the change? Does simulation help with buy-in?

- New process and lack baseline data
- Pair simulation with current research to demonstrate the magnitude of the problem

Next Steps

How will you use simulation going forward?

- Understand current resource utilization
- How patient interact with our health system
- Identify future needs
- Coordinate efforts
- Research

Lessons Learned

What did you like about simulation?

- The simulation approach mirrors research processes (i.e. an iterative process)
- Offers flexibility to align with community context
- Models can be as simple or complex

What surprised you about using simulation?

- Relatively simple to build the model

Lessons Learned

How easy was it to use?

- Simul8 was relatively easy to use.
- Ability to access resources
- Regular check-ins with the instructor helped
- Helps to work with a colleague

How long did it take?

- Model development = 60 minutes
- Building the model in Simul8 = 20-30 minutes.
- Data input, investigating errors, etc. = 60-120 minutes



ED Growth and LWOTS

Prepared by: Raul Medina MLS (ASCP)^{cm}, CSSBB
Lean Coordinator
Vidant Duplin Hospital

Current Problem / Key Question to Answer

What was the motivation for the project?

- Vidant Duplin Hospital is steadily growing and ED utilization is increasing.

What were you trying to learn?

- How much growth can we have while still maintaining a less than 2% LWOT rate?

Process Details

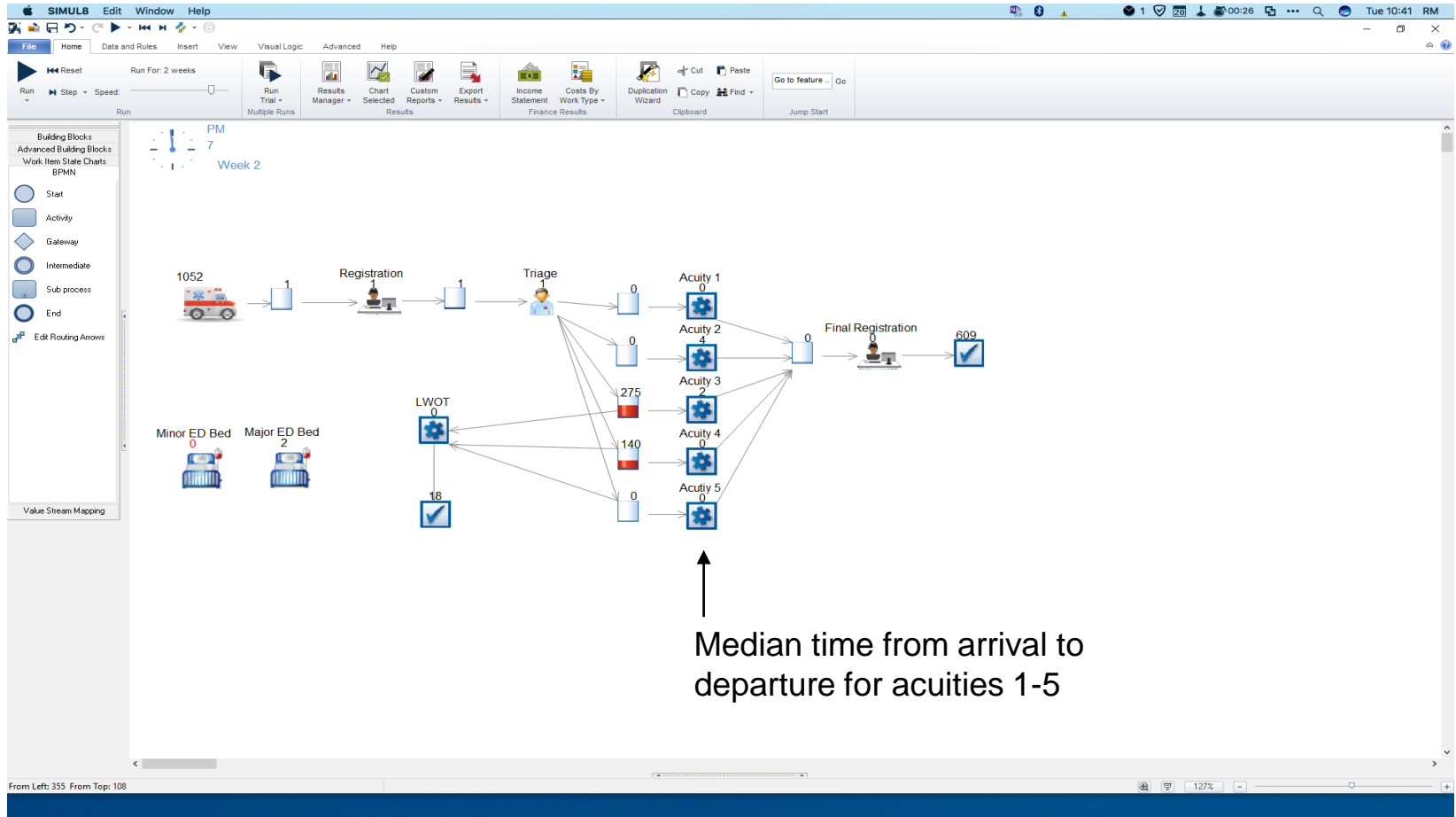
Department: ED

Process Description: ED Throughput

Major Steps:

1. Pre-registration
2. Triage
3. Treatment
4. Final registration
5. Departure

Simulation Model



Results / Key Findings

What were the results of the project? / What was the “answer” or conclusion that you came to?

- Current LWOT rate: 1.7%
- We can increase by 10% (i.e. 86 patients per day) without exceeding 2% LWOT rate.
- Should we increase by 10% we must decide if the current process needs to be changed (i.e. provider in triage) or increase the number of beds in the ED.

Next Steps

How are you going to share the results with others?

- Hospital Executives and senior leadership
- Emergency Department
- Share with other rural hospitals and across health system

How are you going to roll out the change? Does simulation help with buy-in?

- There is no change currently,
- Should we increase by 10% simulation would be useful to help us identify next steps (i.e. what needs to change)

Lessons Learned

What did you like about simulation?

- Learning how simulation works
- Hands-on experience

What surprised you about using simulation?

- Simulation models are not difficult to set-up, however, with the individual attributes (e.g. queues, activities, resources), there was a steep learning curve.

Lessons Learned

How easy was it to use?

- Fairly easy to set-up the model itself
- Difficult to know all the attributes
- Error checking

How long did it take?

- Watching the tutorials/help guides: 3-4 hours
- Building Simul8 model: approximately 4 hours
- Error checking: 1-2 hours

Continue the discussion



SIMUL8 in Health