

Case Study Report of SIMTEGR8 Workshop 1: Integrated Crisis Response, Night Nurses

Purpose of report	To document and reflect upon the process of using a computer simulation model in order to promote debate and make changes to patient pathways
Organisations involved in Case Study	Healthwatch Leicester and Leicestershire County Council
Structure/Format of Event	2 ½ hour workshop
Aim of Event	To review a computer simulation model of the Integrated Crisis Response, Night Nurses patient journey; test scenario's about future improvements to the intervention; make recommendations for future actions to the Step Up Step Down Programme Board.
Date of Event	11 th September 2015 9.30am – 12.00
Aim of SIMTEGR8	To assess the effectiveness of using a SimLean methodology to stimulate debate and action to improve patient pathways

Context of Event

The SIMTEGR8 project is collaboration between Loughborough University, HealthWatch Leicestershire and Leicestershire County Council. The project uses computer modelling and simulation techniques (developed by the SIMUL8 Corporation) in order to analyse the patient journey in four healthcare interventions that Leicestershire are piloting in order to reduce emergency admissions to hospital. This case study report deals with the first workshop in a series of 4, one for each of the interventions which was conducted as a partnership between staff of SIMUL8, Loughborough University and Leicestershire County Council. The workshop participants were staff of Leicestershire County Council and NHS clinical leads for the individual service. The service investigated at this workshop is:

Integrated Crisis Response (Night Nurses Unit) – health and social care support given at home for up to 72 hours.

This workshop was facilitated by two consultants because of the project's original Research Associate's departure from the project. Her two replacements attended in order to observe and become familiar with the process. The consultants were from SIMUL8, accompanied by a simulation developer who had taken over the development of the model and an independent facilitator frequently used by Leicestershire County Council.

The workshop was structured using the following SimLean methodology:

First the approximate model is run to illustrate the previously agreed process (Model Understanding).

This is used as a the basis of a discussion of whether the model represents what happens in reality (Face Validation)

The discussion then moves on to issues that have been revealed by running the model (Problem Scoping)

Finally ways of resolving the issues are suggested by the participants (Improvements)

Description and account of workshop

There were 14 people present, 8 from the case study organisations, 3 representatives of SIMUL8, 2 from Loughborough University and the independent facilitator. The Health and Care Integration Team took care to ensure that the workshop was attended by a varied selection of clinicians and leaders across the relevant organisations. This was essential for the success of the workshop and contributed to an environment where productive conversations could take place. The sessions were managed within a tight timeframe of 2 ½ hours so as to impact minimally on service delivery. The active participation of all attendees and their willingness to commit to action plans was very encouraging. Attendees included nurses delivering the service as well as service leaders and senior operational managers from emergency services at UHL. Additionally, there was Commissioner (CCG) representation and programme input from the Step Up/Step Down integration programme group. This provided a rich mix of perspectives to inform the debate.

At the beginning of the session all participants shared what they wanted to achieve from the simulation event:

- Improving their part of the overall service
- To find ways of increasing the number of beds
- How daytime services can work with night-time services
- To achieve a “seamless, barrier free service”
- What will “offer success seamless, with patient at the centre”

The first section of the workshop was concerned with validating the model and its fit with the current situation on the ground. This was aimed at checking both that the basis for the building of the simulation models was considered accurate and that the participants understood how it had been transferred into the simulation software. This approach first “walked” the participants through the “before” process maps of each intervention, which had been provided to the simulation modeller. It continued by demonstrating how this was built into a SIMUL8-based model and then into a results output in the form of a simplified version of the initial process map, so as to be familiar to the participants. The same process was undertaken to achieve a communal understanding of the system after the implementation of the intervention. Having confirmed the understanding of the processes within the system the simulation was run through to allow the participants to view a top-down perspective and to study the results being output from it. The data output from the simulation models were intended to match metrics used in the reporting of the intervention services.

The process maps were agreed to be accurate and the conversion of these process maps into a simulation model appeared to be understood by all participants. A recent audit of the Night Nursing intervention had been conducted and the Simul8 facilitators were keen to understand whether the audit findings offered insights that might require a change in the simulation model. Earlier discussions on the model understanding and face validation of the model had revealed possible variations in the flow of patients through the model.

Factors considered were:

- Number of admissions avoided
- Night nursing service capacity
- Other “what if” scenarios
- Insights
- Further actions

Having introduced the model the session then turned to the stage which was intended to validate that the representative but simplistic simulation was acting along the same lines of the real system. This wasn't intended to be a detailed validation to assess statistical accuracy, but instead to gain the participants trust that the model was performing in a manner that could be expected.

The participants aided in supplying professional knowledge regarding input data for the simulation that increased the accuracy of the model. Overall, though, it was agreed that this model was performing as could be expected, and any irregularities could be explained through the participants input.

The group agreed overall that the simulation was a good representation of the service, though not in sufficient detail to highlight some of the barriers or capacity blocks to smooth running, for example time of day of notifying potential patients for night services and ability or inability to divert from ED once patients have been presented there. The group discussed in great detail how the flow represented in the simulation reflected the day-to-day reality of delivering services.

A number of issues affect the capacity of the service. The mix of attendees in this session allowed a wide-ranging debate about deployment of staff, limitations in the capacity of the night nursing service and the interaction between the night nurses and the "roaming" staff. There was a detailed discussion around effective rostering.

Having the key individuals responsible either for managing or delivering night nursing services together was a significant opportunity to discuss possible improvements. Participants identified changes and day-to-day barriers to service delivery, assisted by the insights from the simulation. This is evidenced by the action plan described in the next section on improvement.

Discussions on assumptions within the model, for example, around the number of calls per night and travel time elicited subtleties in the service not identified in the model as presented:

- The significant impact and variability of travel time, to and from the patient's home
- Varying scenarios of how patients move through the system
- "Re-referral" required for patients needing the service for more than three nights
- The critical influence of the number of nurses working exclusively on ICRS (as distinct from roaming) on the capacity of the service overall
- Management of referrals during the day

Possible alternate scenarios were discussed and the Simul8 team agreed to incorporate these in the next development phase of the model.

The simulation was received with such enthusiasm that a long and detailed discussion about the service was sparked off as soon as the animation ended. The facilitator needed to interrupt the discussion in order to move on and explore further scenarios. Participants were very keen to explore the different outcomes and effect on their targets that would be produced by changing in reality such variables as time spent with the patients or employing less care assistants. They showed surprise and interest in the results as the simulation re-ran with new figures and asked questions such as "can the model predict the number of patients that can be treated when capacity is increased?" Many suggestions of possible scenarios were forthcoming and gaps in the original data were identified through running the simulation a number of times.

Comments about the model at the close of the session were:

"I got more out of what people were saying than the model itself"

"I was not convinced about the model"

"The model is fascinating"

"As a manager I think that the model is invaluable"

Improvement

The final section of the workshop focused on action planning, a summary of next steps and a discussion around access to the simulation product for future use, including any modifications needed to the model. The workshop was interactive with the delegates demonstrating considerable engagement. They were readily able to identify practical actions to take away and expressed satisfaction in the final round-up and participant feedback discussion. The action plans resulting from the workshops (Appendix 1) were produced immediately following the event and incorporated into the admission avoidance programme reporting mechanisms for the Better Care Fund. These in turn are being fed into monitoring processes such as Key Performance Indicators.

Potential "what if" scenarios were debated at length and can be taken forward, especially as the pressure points within the service are now better understood. The participants appear to leave with the intention to work together to improve the service as some of their comments illustrate:

- We will work together to capture more data about people who phone in during the day
- I will try to understand the demand
- I will look at end of life care

Now that the key staff have been exposed to the model, and have had the opportunity to input into its development this could be considered as a model to assist in future service planning.

Reflection

It has already been mentioned above that the participants expressed their desired outcomes for the workshop and for the project at the start of each session. Hopes that were stated at the Night Nurses workshop showed that participants generally understood that the simulation could help them to improve the service. Areas of concern were:

- Routes to referrals
- Single point of access centre
- A safe Night Nurse service with more beds
- Co-operation with day time services
- Making a patient centred, seamless, barrier free service

The discussion during the workshop was lively with many contributors and engagement with the simulation was high. The participants focused their discussion around the model and its ability to show different outcomes from changing variables. However, the patient pathway featured prominently in the discussions as well as the service as a whole. At the close of the workshop the participants generally thought that it was useful, informative, thought provoking and a helpful way to consider certain issues. One participant considered the model "invaluable".

The specific outcomes voiced by the participants at the start of the session were not directly answered. However, the means to those ends were identified. For example, the manager who wanted to improve their part of the overall service found three of colleagues to assist her in gathering the relevant data to improve the service. The solution to the ideal of a patient centred, seamless, barrier free service was not one of the direct outcomes of the workshop, but the participants realised that they had the tools and links to attempt to achieve that goal.

It was found that:

- The cross-section and attitudes of the participants led to high engagement with the workshop and a meaningful discussion about the patient pathways
- Ways to improve the services were identified
- The potential for simulation modelling of patient pathways was noted
- The workshop stimulated collaboration between participants for future work on the interventions

The concept of using a computer simulation of a patient pathway in order to stimulate discussion on ways for developing the service was successful in this case because the running and re-running of the model with different scenarios gave the delegates insight into the service and its potential as well as promoted the use of the model as a tool to aid and inform decisions.

However, at times the delegates were so closely engaged in discussion that it was hard to keep them on track and to time. In future a firmer explanation of the structure of the workshop could ensure that the delegates have a more focused approach.

The participants generally found the experience useful, informative and a rare chance to meet each other. Certainly in the links were forged between delegates that would lead to further collaboration and the development of the patient pathway. Actions that were prompted by the discussion have already been used to inform future key performance indicators. Therefore it can be concluded that in these cases, using a computer model of a patient pathway as a vehicle of change and development has been successful.

Next steps

- Develop the computer simulation to incorporated the changes identifies during the workshop
- Consider the firm management of discussion during the workshops
- Follow up the delegates to discover
 - o Their general opinion of the workshops
 - o Whether they have completed their actions

Appendix 1

Questions identified by participants at the commencement of the workshop

- How many referrals can the night nursing service take?
- How many more appropriate referrals could be made?
- When will the service run out of capacity if more referrals are made?
- How much extra capacity is needed?

Actions agreed by participants as the simulation took place

	ACTION
1.	<p>Quantify unmet demand, and better understand patterns of demand</p> <p>no of calls to the team per night – (stated 32-50) – and whether this varies by day of the week</p> <p>proportion of demand that ends up as a “roaming” or virtual bed for the night nursing team</p> <p>characteristics of patients whose referrals are accepted e.g. multi-morbidities, exacerbations (so that these patient types can be identified in the ED – emergency admission cohort)</p> <p>referrals lost to the system once beds are full (unknown demand because presumably these patients attend ED and are unseen to night nursing) note: this issue not covered by the audit ; The model will assume that patients will go to ED when no capacity available</p> <p>referrals received during the daytime</p> <p>commence collection immediately, on system one as follows:</p> <ol style="list-style-type: none"> 1. Referral declined because beds are full, split by source of referral 2. referral declined because inappropriate 3. Referral refused by? Patient 4. 4 time and day of referral 5. ? Other reasons <p>Assume that 38% of referrals are end of life.</p>
2.	Provide KPI's for “declines”
3.	Travel Times – need a sample of actual travel times so these can be represented more accurately
4.	capture number of re- referrals (triggered after the three-day maximum stay in virtual beds reached); to be flagged on handover and the outcome of these captured; what are the circumstances around re-referrals and would upstream packages of care have helped?
5.	<p>Once issues of capacity within the system have been addressed, consider (with UHL) raising awareness of the service e.g.</p> <p>via information to key staff e.g. new doctors at induction (? Prompts on lanyards), patient trackers and primary care coordinators,</p> <p>promotional leaflets</p> <p>links with SPA</p>
6.	Need to capture referrals onwards-e.g. for end of life care and those instances where referrals were potentially avoidable
7.	Conduct audit of ED attendances who could have been referred
8.	A/B to link with UHL and LPT colleagues; invite C & D to a step up/stepdown meeting
9.	Work with GPs as the main referrers to ensure they can make best use of the service
10.	Consider investigating discharges from hospital within 48 hours of admission and End of Life Discharges-could these have been referred to night nursing?
11.	Simplify messages to referring agencies of which people can be referred
12.	NHS organisations to find / create opportunities for joint discussions

Other points raised

Useful to be able to run and rerun scenarios on changing patient referrals with updated data as time goes on – make model available for use

SPA would like to have this information in real time

Once the patient cohort is better understood, it should be possible to search ED/Admission data to find the same patient cohort and see whether, over time, admissions of this type are being reduced and the potential for increasing referrals.