



Measuring Outcomes

The Handbook

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Measuring the outcome

Outcomes measures are not only used in science, experiments, treatments and therapies. In fact, what we do not realise is that we measure outcomes almost constantly in our everyday lives. When an individual joins a gym, he/she will measure the progress and outcomes of various training regimes accompanied by a healthy diet to observe how close they are getting to their weight loss and fitness goals. If somebody is getting their house insulated, they will have some sort of measure that will outline the extent to which the insulation has made their home warmer and we have a mileage gauge in our cars to decipher how many miles we can cover within a full tank. Now imagine doing all these things **without** measuring their outcomes, it would seem pretty aimless and baseless to do so, therefore, outcomes measurements is a part of our nature and allow us to constantly observe and interpret the progress in a given context and to base a decision on them. If the gym goer did not monitor their weight throughout the fitness regime, then how would he know how much he has improved or if he has improved at all! A constant measurement will thus allow him to change aspects of his regime and diet in order to re-align himself to the goal he has in mind.



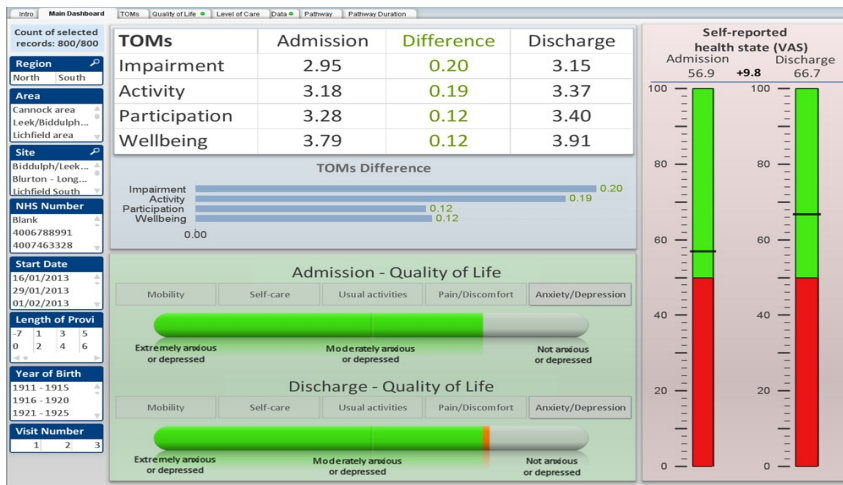
“Why am I doing this again?”

Measuring outcomes of therapy is monitoring a patient's progress throughout a therapy procedure. Measuring the outcomes of therapy is important because doctors need to know how their patients are progressing as that will determine the course of their care plan and treatment moving onwards. Adding to this, if a patient relapses or regresses, having an outcome ‘audit trail’ will enable healthcare professionals to determine where it went wrong. Not only should outcomes data be recorded accurately and clearly, the data should be represented in a way which allows doctors to interpret, analyse and form actionable insights based on the data.

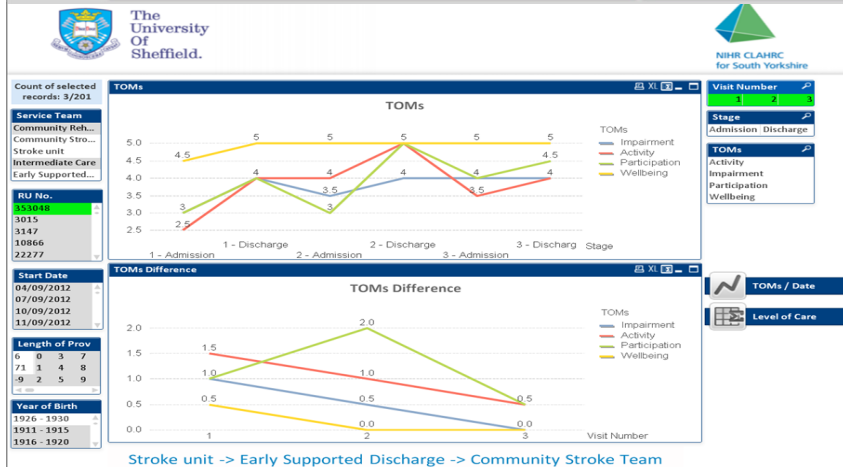
We turn to the University of Sheffield School of Health and Related Research to examine how they measured Therapy Outcomes (TOMs). Therapy Outcome Measures measure the ability of a patient in four distinct ways: physical impairment, activity, participation and well-being. Patients are scored against these factors on an 11 point scale, at admission and upon discharge. The outcomes data was previously recorded manually and occasionally inputted onto Excel spreadsheets. Though the data is recorded there is little or none action taken based on the data. The data could potentially be used for evaluation of treatment, establishment of best practice or a form of comparing and contrasting with other data sets. In summary, there is a lot of value in the data whose potential remains locked.

To digitise the TOMs scores, Patient Record Systems can be used to capture data such as TOMs using a template, however, the problem is not data input but the system prevents bespoke analysis by hindering a data extraction function as well as cost implications associated if wanting to extract specific data sets.

In came DCC and our first plan of action was to re-design the TOMs form. Bear in mind, we did not alter the wording of the questions, but simply made it easier to fill out and to automate from removing the manual entry element. Re-design was done with close contact with front end staff i.e. those filling the forms out to ensure it met their needs. On completion of the TOMs, DCC automated the extraction of the data from the forms and exported the data sets to our interactive dashboard, performing verification and quality checks beforehand to ensure the data is accurate. Once the data was on the dashboard, it was in a visual format using a graphical interface allowing the therapists to view their TOMs score in a snap-shot type view as well as allowing them to focus and extract specific data they may want for analysis and reporting. Adding to this, they could compare and present their TOMs scores with other professionals' scores. Moreover, the dashboard is simple to use with little technical expertise required. The following depict some shots of the dashboard:



This is a snapshot view of the TOMs scores. Starting with top left we have the actual TOMs figures, underneath represents the patients quality of life on admission and discharge. To the right (the bar that resembles a thermometer) shows the VAS scores. To the far left (blue headings) are controls that enable a user to filter the data as they wish for example by region or area.



The next tab displays a graphical breakdown of a patients' TOMs scores at each admission (top) and the difference in scores after each admission (bottom).



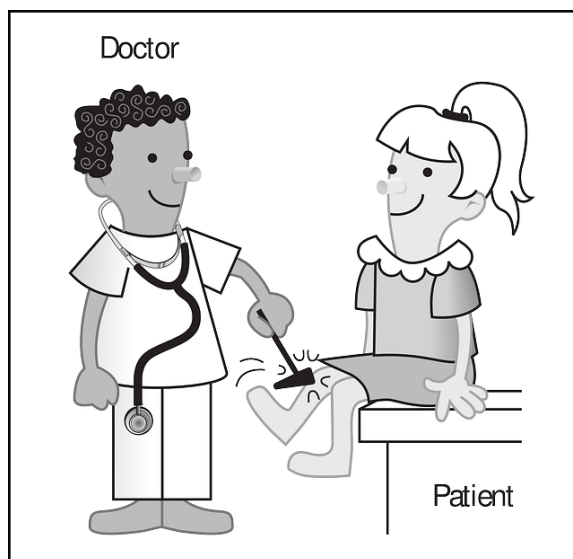
This tab depicts a granular breakdown of the quality of life score at admission and discharge.

What is the purpose of the dashboard?

The dashboard looks great and attractive with all the fancy graphs and colours but you may be wondering why Sheffield University developed and used this specific dashboard with DCC and what purpose(s) does it serve? Essentially, is there any substance to the style?

A key benefit of the dashboard is that it is totally bespoke. It starts off as a blank canvas and you can turn it or *paint* it into anything you desire. Earlier we mentioned that certain patient record systems do not support data extraction and there is little interactivity and scope to look at the data on a granular level. Our dashboard is dynamic and interactive, this means that if need be it can constantly change in the sense that one is able to add or take away particular data sets from the equation to see how answers and results differ. This feature is facilitated by the side controls, a therapist can look at their TOMs scores between specific start dates, patients in a certain age group, length of provision and so forth and this is achieved at a few clicks of the mouse. With certain systems, there is not much room for such flexibility once the data is ingested. Furthermore, the owner of the dashboard are Sheffield University. As the dashboard is theirs, there are no surprise costs and they are not required to remember any support call numbers because the dashboard is very easy to use and navigate around.

Secondly, therapists are now doing much more with the data. Previously, the TOMs data was primarily used for record keeping. The dashboard opens up numerous possibilities to compare, contrast and pose the relevant questions. For example, for a patient who has had three admissions, the variances in their TOMs scores are now visually noticeable per admission. This allows therapists to examine instances of dips in scores, compare their scores with other therapists and as a result formulate best practice guidelines. For example, relapses are common in the treatment of mental conditions, patients can also relapse whilst in rehab after broken bones, overcoming various addictions and other therapies such as SALT and ENT. Relapses can happen due to many reasons and having a visual format which depicts peaks and troughs can help therapist locate the when relapses occur and if this drop in score is happening across the board suggesting there is a common causing agent. Adding scores of fellow therapist can go a long way towards addressing the troughs and establishing a method of addressing the issues by understanding what other therapists do when facing the same problem.



It was quite simple to get the data from the TOMs forms onto the dashboard. As mentioned, we designed the form on specialist data capture software in order to make it fit for automated data capture. Automating data capture essentially means the elimination of manual data entry. The TOMs was scanned and the data automatically uploaded to the dashboard after verification. The process of data automation promises an accuracy at the rate of 99.9% hence the data is extremely reliable. What's more is that business rules and validations that are the back-end design of the form further help reduce anomalies by demanding data from certain fields to be in a specific format i.e. the date or some other unique identifier to be