

# EARLY WARNING PREDICTIVE WORKFORCE PLANNING TOOL (IPLAN)

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- Led by Imperial College Healthcare NHS Trust, partnered by Imperial College.
  - Project carried out in three intensive care units at the multi-site NHS acute hospital trust in London.
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## INTRODUCTION

Being unable to anticipate workforce problems and requirements can put patient care at risk. To address this, a team at Imperial College Healthcare NHS Trust in London have developed an evidence-based workforce planning tool (IPlan) that enables teams to identify staffing level issues that coincide with deterioration in pressure ulcers and other patient safety events.

The tool allows teams to plan effectively and address fluctuating acute care needs and challenges. Use of the tool in intensive care units (ICU) improves planning and preparedness, thereby ensuring better quality of care and improved patient experience.

# WHY DID THEY DO THIS PROJECT?

Inadequate multidisciplinary team planning and anticipation of workforce problems and requirements can reduce quality of patient care and potentially increase mortality, morbidity and infection rates. Yet workforce data have traditionally been presented in dense data tables that make trend analysis difficult or impossible.

Clinical teams do not often have the right information in order to understand how staffing changes may drive variations in quality and safety of care on their ICU. This is due to disjointed corporate and clinical data.

The Shared Purpose project team at Imperial also discovered cultural and systemic problems that contribute to these issues. For example, the differing perceptions of ICU teams and senior managers about ICU performance and whether staffing guidelines were being met; different teams planning their rosters independently of each other; data being collected but not linked or fed back to staff; and data on wards not being detailed enough for statistical analysis.

By improving clinical teams' access to, and use of, effective and integrated workforce and clinical information, workforce problems— for example, due to seasonality, out-of-hours staffing and varying patient acuity – could be anticipated and responded to, thereby improving patient safety, patient experience and clinical team efficiency.

## WHAT DID THEY DO?

In order to understand the issues around workforce data, the project team began by holding stakeholder events to discuss the challenges and practicalities of finding links between workforce data and patient safety problems. Data workshops were held with ICU team members to look at what data were available and what clinical outcomes were most important to understanding quality and safety.

The team retrospectively analysed three years of staffing and clinical data at the trust and linked previously unlinked patient and workforce datasets. Through this they could then create metrics that helped in developing a preliminary interactive tool using the analysed data and statistical modelling.

The monthly trust-wide workforce data was not detailed enough for statistical calculations and so the team focused on ICU daily data instead.

The tool, IPlan, was then piloted using a Plan Do Study Act (PDSA) cycle over six months. Monthly multidisciplinary meetings were held during the pilot phase whereby staffing and ICU conditions over the previous month were reviewed, amendments to the tool were made and plans made for staffing for the following month.

The team also developed a safety scale survey containing six key questions for clinical team members to complete at the end of every shift. This captured how ICU teams felt about patient care on each shift and the results fed into the IPlan tool for comparison with the quantitative data.

## WHAT IMPACT DID THEY SEE?

The project is still in the pilot phase and so it is not possible to assess the full impact as yet. However, it is clear that the initiative has led to an improved understanding among staff of the relationship between risk and safety, and ICU staffing. The project has also enabled a dialogue between clinical and corporate teams about their data, including issues around access, timeliness, accuracy, efficacy and reliability.

The project team has worked with both corporate staff from HR and Information, and clinical staff from ICUs, on improving data accuracy. Many issues relating to missing or inaccurate data have been resolved, and inaccurate data rectified where possible. Professional groups have been helped to understand, question and evaluate data that are entered into systems by themselves or their colleagues, and the data are helping staff re-assess supply and demand for clinical services, and evaluate service improvements and developments, such as seven-day working.

An unintended consequence was realising the potential benefits to workforce planning of multidisciplinary liaison and discussion. The data was visible to all members of the multidisciplinary team, for the first time. This encouraged constructive dialogue between different professionals about their practice, and active engagement with the data managers.

The team is using qualitative and quantitative methods to evaluate the pilot study and to understand whether using multidisciplinary staff planning meetings supported by IPlan multidisciplinary data has a positive effect on outcome measures.

## WHAT DID THEY LEARN?

### **Disjointed workforce planning**

Workforce planning was previously completed by professional groups, with no multidisciplinary elements. Staff rostering and patient contact time were recorded differently for different types of staff, on different systems. The result of this variation was that it was difficult to see the relationship between the multidisciplinary workforce and other factors, without significant additional work to identify, clean and link the data across the various systems. A more standardised way of recording staff time with patients would be beneficial nationally to assist with measuring workforce impact on other factors, especially clinical data.

### **Addressing data issues**

The trust's clinical outcome data was weekly or monthly rather than daily, and overall numbers were lower than expected, so the project's predictive modelling element has focused on an area with sufficient data: identifying tipping points in relation to nursing hours per patient day.

If clinical outcome data are to be used effectively, significant improvements are needed, including clearer national definitions; spelling out how data are collected, analysed and reported; improved approaches to extraction and storage of data; the use of statistical methodologies; and more effective feedback to clinical teams.

### **Qualitative data as well as quantitative**

The development of the safety scale survey arose from interviews with staff on their perceptions of risk and safety, and it demonstrated the benefits of using and incorporating qualitative data.

### **Recruitment challenges**

Medical statisticians of sufficient calibre to run a programme of this nature are extremely rare. The recruitment process delayed the programme by one year.

## WHAT ADVICE WOULD THEY GIVE TO OTHERS?

### **Strong alignment in values is important**

Positive alignment between the improvement issue and the clinical teams' values is important, and can result in stronger commitment and enthusiasm from clinical teams. Commitment from clinical teams, for example in giving up their time, participating in workshops and volunteering for secondments, is a strong lever for change.

### **Have consistent leadership**

Having a consistent executive director and programme lead supporting the programme from application stage through to programme completion ensures consistency of approach, which is especially important when faced with barriers and challenges.

### **Engage all corporate departments**

Engaging with all corporate departments at the start of the programme to get their support and improve their understanding of the programme can encourage collaboration and openness to change. This may help to avoid bureaucratic processes slowing down the progress of the programme, from getting ethics and information governance approval, to procurement of non-standard software and recruitment to fixed-term posts.

### **Find the right software**

Excel is not sufficient to manage the type and quantity of data involved in projects such as this. Statistical software is needed to successfully manipulate such large quantities of data and match identifiers across different datasets.