**Validation of the Royal Stoke Pharmacy Workforce Calculator: a mixed methods study**

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**Introduction**

The Royal Stoke Pharmacy Workforce Calculator (RSPWC) was developed to determine local clinical pharmacy staffing levels. Application of this algorithm-based tool to the pharmacy workforce in different settings required validation. This study aimed to establish consensus on the RSPWC components and evaluate its transferability to other secondary care settings. Specific objectives were:

* Identifying an ‘activity standard’1 for clinical pharmacy activities
* Identifying ‘unavailable time’1 in the employment of pharmacy staff
* Evaluating the reliability of RSPWC outputs when used by different operators at different sites

**Methods**

The study adopted the Workload Indicators of Staffing Need (WISN) approach developed by the World Health Organisation.1 This involved gaining consensus from experts on an ‘activity standard’ (tasks, times and frequencies) for clinical pharmacy activities. The Delphi technique (an established method for consensus building) was used to develop the activity standard, over two rounds with an expert panel of clinical pharmacy managers from a variety of secondary care settings in the UK, recruited through professional network forums. In the first round participants completed a questionnaire about the direct patient care activities completed by their pharmacy staff for each patient admission, the average length of time these take and the average number of times they are undertaken per admission. The questionnaire also asked about the amount and nature of ‘unavailable’ (i.e. for direct patient care) time for pharmacy staff groups. In round 2, participants were reminded of their data, were fed back the group’s mean time or frequency for each activity and asked to complete the questionnaire again in light of this information. Participants were subsequently given a copy of the RSPWC and asked to use it to calculate staffing requirements for a series of scenarios. This ‘operator evaluation’ explored the reliability of the tool when used by different operators. Institutional ethical approval was obtained. Data collection ceased in December 2016.

**Results**

Twenty-one p clinical pharmacy managers from sites across the UK were recruited (round one), with a broad split between district general hospital and teaching hospital Trusts. Eleven responded in round 2 Consensus (i.e. >50% agreement) was achieved for 68% of components (mainly activities and frequencies, but less on time taken) of the algorithm that drives the RSPWC. For a further 21% of components, ‘national best representative’ (i.e. closest fit) figures were identified from the data. Consensus was not achieved for 11% of components. These related to elements dependent on individual patient responses to medicines, but closer fit figures could be derived for typical patient types. The ‘operator evaluation’ demonstrated reliability in its use by different operators.

**Discussion**

The results of the study demonstrate consensus for many components of the RSPWC, with a pragmatic approach taken towards the remaining components for the purpose of algorithm functionality. This appears to be the first consensus on the required service components for the delivery of pharmaceutical care, across multiple hospital sites nationally in the UK. The findings are not necessarily applicable beyond district general and teaching hospitals, but nevertheless enable widespread adoption of the RSPWC.

**References**

1. World Health Organisation. Workload Indicators of staffing need (WISN) Users Manual. Geneva: 2015; Available at: <http://www.who.int/hrh/resources/wisn_user_manual/en/>. Accessed 05/10/2017.