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Title: What influences clinicians to choose wisely?

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**Introduction:** Routine pre-operative (pre-op) testing before elective surgery is widespread. However before most procedures, this testing is of low value as testing rarely changes management, yet may cause harm to patients. Choosing Wisely is a campaign which aims to provide recommendations and encourage clinicians and patients to re-consider medical tests, procedures and treatments which may lead to unnecessary harm to patients and may add further costs to the healthcare system. A brief Choosing Wisely campaign was run in Christchurch Public Hospital (CPH) between August and October 2018 in response to an internal audit of unnecessary routine chest x-rays (CXR). The audit found that CXRs from general and plastic surgery comprised the majority (91%) of routine CXRs ordered by all surgery departments at CPH. The effectiveness of Choosing Wisely depends on the dissemination and uptake of its recommendations to reduce low-value care. Hence this study was done to evaluate the CPH campaign and learn information which could be useful for future clinical initiatives.

**Aim:** To evaluate the effectiveness of awareness-raising by the Choosing Wisely campaign in CPH, to assess what influences clinician behaviour around pre-op testing and to determine what can be done to bring about change in clinician behaviour.

**Impact:** The data from this study provides insight into barriers regarding changing clinician behaviour and can inform the implementation of similar strategies to reduce unnecessary pre-op testing in New Zealand.

**Methods:** Short 5-15 minute, semi-structured, one on one, audio recorded interviews were conducted with 15 doctors of varying seniorities from general surgery who were exposed to the campaign between August and October 2018. Five consultants, five registrars and five house officers who were randomly picked from a pool of eligible clinicians were interviewed after they were consented via email.

All recruitment and interviews were conducted between 26 November and 12 December 2018. These interviews covered four general topics including getting background information, asking specifically about awareness and effectiveness of Choosing Wisely campaign, exploring barriers to changing clinician behaviour around pre-op testing and exploring potential interventions which may be useful in the future to change behaviour. Data were analysed using Braun & Clarke thematic analysis methodology.

**Results:** Four themes and 17 sub themes emerged from the interviews. The main themes included awareness of Choosing Wisely, thoughts around pre-op testing, barriers for changing clinician behaviour and tools & strategies for reducing unnecessary pre-op testing.

The awareness of Choosing Wisely theme consisted of what clinicians knew about Choosing Wisely and how they acquired knowledge of Choosing Wisely. The later sub theme involved an evaluation of whether the CPH campaign helped to spread awareness of Choosing Wisely. Most participants had an understanding that Choosing Wisely involved picking the correct investigations based on scientific evidence for patients. In terms of the usefulness of the campaign in spreading awareness, it was found that only few participants had both seen the campaign media and understood its message.

Thoughts around pre-op testing theme included opinions on current pre-op testing and factors which influence it. Opinions included the presence of too many unnecessary tests with a need to minimise them, need for patients to have blood tests for baseline and tests to be done based on the clinical scenario. *“There probably is a degree of unnecessary tests done I would say. When you’re in preadmissions, you just obviously not really thinking too much about that side of things.”* – House officer 2.

Significant factors influencing testing included age of patient, type of surgery, medical history of patient, if it was part of the breast unit protocol and if pre-op tests would be preferred by other clinicians involved in patient’s care.

The prominent barriers for changing clinician behaviour included lack of knowledge around new evidence, staff being busy and not having enough time, mental automation around practices, guideline related barriers, lack of communication between clinicians, traditional practice of ordering tests and worry around patient safety if not tested. Similar barriers for clinicians have been found in previous studies.

Tools & strategies suggested included auditing pre-op testing decisions, providing adequate guidelines / protocols, having an appointed Choosing Wisely promoter in departments, having evidence based educational presentations for all clinicians, having team meetings at start of staff changeover to improve communication and making changes related to house officers. These strategies align with evidence from previous studies of interventions in clinical settings to reduce unnecessary pre-op testing.

**Conclusion:** The findings of this study suggest that the campaign in CPH was not very effective in spreading awareness of Choosing Wisely guidelines and there remains a need to minimise unnecessary pre-op testing. This study identified prominent barriers for changing clinician behaviour such as lack of communication, mental automation and traditional practices. In addition several strategies were identified to overcome these barriers including evidence based educational presentations, providing clear & specific protocols and auditing testing decisions.