Knowledge and confidence of junior medical doctors in discussing and documenting resuscitation plans: A cross-sectional survey

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This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1111/imj.14994

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Target Journal: Internal Medicine Journal (6.03)

Word Count:

Figures: 0, **Tables:** 4

Acknowledgements: Dr Jamie Bryant is supported by a National Health and Medical Research Council-Australian Research Council Dementia Research Development Fellowship. We acknowledge infrastructure funding from the Hunter Medical Research Institute. We wish to thank study participants, Ms Briony Johnson for research assistance, and Ms Sandra Dowley for assistance with data entry.

BACKGROUND

A Resuscitation Plan is a medically authorised order to use or withhold resuscitation interventions. Also known as 'Not for Resuscitation Orders', 'Resuscitation Management Plans', and 'Limitation of Medical Therapy (LOMT)' orders, resuscitation plans provide concise, standardised and easily accessible information to clinicians about what to do in the event of a cardiac arrest or major clinical deterioration. Resuscitation plans have been implemented in many hospitals throughout Australia(1) to assist in the delivery of high quality care, particularly for individuals who are at the end of life and for whom palliative approaches, rather than aggressive medical care, are most appropriate.

Previous research exploring resuscitation planning has found lack of standardisation across Australia, partly caused by variation in regulation across States, including wide variation in the content of hospital policies, order forms and patient information leaflets (1, 2). Even within individual states, each hospital may have its own unique do not resuscitate form and accompanying site-specific policies(2)(3). In NSW, a state-wide *Adult Resuscitation Plan* exists, and is governed by a NSW Health policy directive (4). Resuscitation plans are expected to be completed if the patient's recovery is uncertain; if the treating clinician asks him or herself, 'Would I be surprised if this patient were to die in 6-12 months?' (so-called 'surprise question') and the answer is 'No'; if a patient clinically

deteriorates requiring activation of a Rapid Response System, or is anticipated to do so and if the patient's condition is considered high risk.

Despite undisputed benefits supporting the use of resuscitation plans, clinical audit studies have shown varying rates of resuscitation plan use between settings and across patient groups. One Australian study found that only 16% of patients aged 80+ years had a resuscitation order written within 24 hours of admission(5). Another study found that 83% of patients who died during their admission had a resuscitation plan documented, suggesting that patients at the highest risk of death were targeted for completion(6). A study conducted with patients admitted to a geriatric medicine ward found that an acute resuscitation plan was completed for 75% of patients admitted (7). Patients were more likely to have a resuscitation plan completed if they were older, had higher comorbidity, were born in Australia and were admitted later in the year(7).

Absence of appropriate resuscitation orders exposes patients to the risk of highly invasive medical interventions that can be of questionable benefit depending on individual patient circumstances.. When not for resuscitation orders are written for general medical patients in hospital, they tend to be written for those already recognised as dying or at high immediate risk of death(8). It is therefore critical that appropriate patients are identified early in their hospital admission for resuscitation plan completion. The knowledge, confidence and attitudinal dispositions of health-care professionals have been shown to influence healthcare provider decision making and behaviour in a variety of circumstances. Discussion and completion of resuscitation plans can be difficult for a number of reasons(9). Discussing death and hypothetical treatment scenarios can be emotive for both the doctor and patient, and requires adequate time for the discussion to occur, and well-developed

interpersonal skills. The personal experience of the doctor in judging futility and concerns for patient psychological and emotional well-being can also be barriers to discussion(10).

There is little data available about the knowledge and confidence of junior medical doctors (JMOs), or their perceptions about support provided, for discussion and documentation of resuscitation plans. JMOs play a key role in the delivery of hospital-based healthcare, and often provide a significant amount of face-to-face care for patients including assessment, communication with the patient and/or their legal guardian, communication with senior medical staff, and overall co-ordination of care(11). Understanding knowledge and confidence for resuscitation planning amongst junior doctors, and any gaps in knowledge, is therefore critical for high quality patient care. This study aimed to explore among JMOs:

1) Self-reported confidence in discussing and completing resuscitation plans.
2) Knowledge of NSW Health Policy about (a) whether resuscitation plans are legally enforceable; and (b) the key triggers for completing a resuscitation plan;
3) The factors associated with higher knowledge of triggers for discussing resuscitation plans with patients.

METHODS

Setting. A cross-sectional survey was conducted at five hospitals located across two different local health districts in New South Wales, Australia. Hospitals included one principal referral hospital, three public acute group A hospitals, and one public acute group B hospital as defined by the

Australian Institute of Health and Welfare Australian hospital peer group classifications(12). Four hospitals were located in major cities, and one was located in an inner regional area.

Participants. All junior medical doctors, including trainees, interns, registrars and residents, on clinical rotation at any of the participating hospitals at the time data collection occurred were eligible to participate. In the participating hospitals, junior staff rotate every three to six months.

Recruitment. Junior doctors were invited to complete the survey by members of the research team who were either junior or senior doctors at a participating hospital. Junior doctors were approached at scheduled training sessions, before or after ward rounds, or at change of rotation orientation days. Potential participants were given a verbal overview of the research and provided with a survey package that included a detailed information statement, a paper copy of the survey, and a reply paid envelope.

Data collection. Data collection was carried out between August 2018 and June 2019. Consenting junior doctors were asked to complete the survey at their convenience and return it by either handing it back to the junior/senior doctor after completing, placing it in a secure box in a hospital common room, or mailing it directly to the research team using the supplied reply-paid envelope. Return of a completed survey was taken as consent to participate.

Measures. Participants completed a 63-item survey that included questions about resuscitation planning, advance care planning, substitute decision making, demographic characteristics and clinical experience. Only questions related to resuscitation planning are reported here.

Knowledge of NSW Health Policy. Participants were provided with the following description of a resuscitation plan alongside a picture of the NSW Health *Adult Resuscitation Plan* form (see: https://www.aci.health.nsw.gov.au/__data/assets/pdf_file/0006/273543/nsw-health-resuscitation-plan-adult-100914.pdf): "An Adult Resuscitation Plan, as seen in the image on the right, is an order to use or withhold resuscitation measures. It also documents a patient's wishes about other aspects of treatment relevant at the end of life, such as respiratory support and referral to intensive care. The NSW Health Policy 'Using Resuscitation Plans in End of Life Decisions' outlines the triggers for discussing completion of an Adult Resuscitation Plan with patients." Participants were asked to respond true, false or I don't know to the statement "Resuscitation plans are legally enforceable medical orders". Participants were then presented with 10 potential triggers for discussing completion of a resuscitation plan with a patient and asked "Without referring to any other sources, please answer 'Yes', 'No' or 'I don't know' to the following questions based on your current knowledge of the policy". Correct items were derived directly from the resuscitation planning policy guideline (see Table 3 for items). Incorrect items were developed by the research team and reviewed by one junior and two senior doctors for relevance. A total knowledge score was created by summing the number of correct answers across the 10 triggers (range 0-10; higher score reflected greater knowledge), and a mean knowledge score obtained.

Confidence. Participants were presented with four statements about their knowledge and confidence discussing and documenting resuscitation plans with patients. Participants responded on a four-point Likert scale for each item (strongly agree to strongly disagree).

Demographic characteristics and clinical experience. Participants self-reported their gender, age category, Aboriginal or Torres Strait Islander status, and religious affiliation. Participants also self-reported their number of years' experience as a doctor (post graduate year 1-4+), whether they were currently enrolled in a specialist training program (yes/no), whether they had ever participated in post-graduate courses or training about advance care planning (yes/no), and whether their medical degree was obtained in Australia or overseas. Participants also self-reported the number of patients with whom they had discussed completion of a resuscitation plan, and the number of patients with whom they had documented a resuscitation plan, both with and without a consultant or senior medical officer present.

Statistical analyses. All statistical analyses were programmed using SAS v9.4 (SAS Institute, Cary, North Carolina, USA). Variables were summarised as frequencies and percentages for non-missing observations. Fisher's exact test was used to test associations between categorical variables. High knowledge of triggers for discussing resuscitation planning was defined as 8 or more correct responses from 10. Crude and multivariable logistic regression was used to test the association between demographic variables and correct knowledge of triggers for discussing a resuscitation plan. Odds ratios with 95% confidence intervals and p-values are provided. Regression assumptions were assessed with residual plots.

Ethics approval. Ethics approval was obtained from the appropriate local health district Human Research Ethics Committee, with site specific governance approvals obtained from each participating site.

RESULTS

Of 328 surveys distributed, 118 were completed and returned (36% response rate). The demographic characteristics and clinical experience of participants is outlined in Table 1. The majority of the sample was female (n=65, 57%), aged 25-29 years (n=67, 58%) and had four or more years of post-graduate training (n=46, 40%). Almost half were currently enrolled in a specialist training program (n=51, 46%), however only 12% (n=14) had received post-graduate training about advance care planning. On average, participants reported that they had discussed resuscitation planning with patients an average of 6 times in the previous 6 months with a consultant or senior MO present (SD=12.3) and 15.2 times without a consultant or senior MO present (SD=24.4).

Participant confidence in discussing and documenting resuscitation plans is provided in Table 2. More than two-thirds of participants agreed or strongly agreed they had been asked questions when discussing resuscitation plans with patients that they hadn't been able to answer (n=87, 74%), or had felt unsure about answering (n=92, 79%). However, most participants also agreed or strongly agreed that they felt confident both discussing (n=92, 79%) and documenting (n=102, 87%) resuscitation plans with patients. Most participants reported feeling well supported by consultants and senior medical staff to discuss (n=81, 69%) and document (n=83, 70.5%) resuscitation plans.

Knowledge

Less than half of participants (45%, n=52) correctly indicated (as stated in the NSW Health Policy) that resuscitation plans are legally enforceable medical orders, 27% of participants (n=31) incorrectly indicated that resuscitation plans are not legally enforceable; and 15% of participants (n=17)

indicated they were not sure about the enforceability of resuscitation plans. Table 3 shows the number and proportion of participants who correctly and incorrectly identified ten triggers for discussing a resuscitation plan with patients. The mean number of correct answers was 6.8 (SD=1.8). Overall, 76% of participants (n=90) correctly identified the five triggers specified in NSW Health policy for completion of a resuscitation plan. Only 8 participants (6.8%) answered all questions correctly, and 37.8% (n=45) answered 8 or more correctly.

Factors associated with greater knowledge of triggers for completing resuscitation plans

There were 107 complete responses for inclusion in the regression analysis. Overall, 42 participants (39%) answered 8 or more triggers for completing resuscitation planning correctly. Age was the only factor significantly associated with higher knowledge, with participants aged over 30 more than 4 times more likely to have high knowledge of triggers for discussion (adjusted OR 4.28 (95% CI 1.54 to 11.89), p= 0.0053).

DISCUSSION

This study is the first conducted in Australia to explore knowledge of junior medical officers about resuscitation planning.

Overall, participants self-reported high levels of confidence discussing and completing resuscitation plans. However over one quarter of participants reported that they did not receive adequate support from consultants and senior medical staff to discuss or complete resuscitation plans. Previous research has found that senior medical staff were consulted for less than 30% of completed resuscitation plans, even when there was a resuscitation plan advising against the use of CPR (13).

Given the sensitivity and complexity of not for resuscitation orders, these findings indicate the need for greater engagement in and support from senior medical staff in the development of resuscitation plans.

There was a disconnect between confidence and knowledge however, with more than two-thirds of participants indicating they had been asked questions when discussing resuscitation plans with patients that they hadn't been able to answer (n=87, 74%), or had felt unsure about answering (n=92, 79%). While junior doctors often conduct resuscitation planning discussions in clinical practice, many feel unprepared to explain complex procedures, such as CPR and mechanical ventilation(14). Without adequate explanations of the potential benefits and risks(15), patients and their families will have a poor understanding of procedures, and may overestimate their likelihood of success(16, 17). Despite this, bedside teaching of communication skills is often neglected in favour of teaching pathophysiology and disease management(18). A recent meta-analysis reported that the use of communication interventions designed to facilitate code status (resuscitation) discussions, such as video-decision aids, can improve code status discussions, potentially altering patient preference and increasing patient knowledge(19). As we did not ask about the frequency with which JMOs were asked questions they couldn't or were unsure about answering, it is possible that this occurred infrequently in our sample, and thus overall confidence in undertaking resuscitation planning was still high. The disconnect between confidence and knowledge may also reflect a failure of junior doctors to recognise their need for additional knowledge or support (unconscious incompetence).

Overall knowledge of triggers for initiating completion of resuscitation plans as per hospital policy was high, with between 86%-98% of participants correctly identifying the five triggers specified in the policy. However, there were high rates of endorsement of some incorrect triggers for completing a resuscitation plan. For example, 63% of JMOs incorrectly identified memory loss as a trigger for completing a resuscitation plan, and 57% incorrectly indicated that resuscitation plans should be completed for those undergoing a routine procedure. This may indicate the need for clarification about the specific purpose of resuscitation planning and circumstances for completion..

Previous work by Smith and colleagues who conducted an audit found that approximately 25% of acute resuscitation plans were completed for younger patients with no significant comorbidities and no resuscitation limits(13). However, acute resuscitation plans were absent for more than half of patients admitted to residential aged care and for older patients with serious comorbidities. Less than half of participants in our study correctly identified that resuscitation plans are legally enforceable medical orders as per NSW Health policy, revealing a critically important gap in knowledge. Together, these findings indicate a need for future research to gain a better understanding of the factors that influence completion of a resuscitation plan, and to develop orientation programs, education and other interventions to increase competence of junior doctors and rates of completion for appropriate patients. This is likely to be particularly important as part of post-graduate training and during clinical rotations, when experiential learning can be used to develop specific and transferable skills for resuscitation planning.

Strengths & Limitations

Study findings should be considered in light of the strengths and limitations of our approach. While our sample was drawn from five hospitals, the overall sample size was small and the response rate (36%) was moderate, which limits the generalisability of findings.

Conclusion

Most junior doctors feel confident discussing and documenting resuscitation plans. However, there is a need to improve knowledge about when resuscitation plans should be documented to ensure they are completed with patients who are most at risk of clinical deterioration, and when the directions in the resuscitation plans should be followed.

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Table 1. Participant Demographics (n=118)

Variable	Category	N (%)
Gender	Male	50 (43%)
	Female	65 (57%)
Age	20-29	67 (58%)
	30-39	41 (36%)
	40-49	4 (3.5%)
	50 or over	3 (2.6%)
Aboriginal or Torres strait Islander?	Yes	2 (1.7%)
	No	113 (98%)
Medical degree obtained in Australia?	Yes	87 (76%)

	No	27 (24%)
Number of years' experience	Post graduate year 1	18 (16%)
	Post graduate year 2	42 (37%)
	Post graduate year 3	9 (7.8%)
	Post graduate year 4 or greater	46 (40%)
Enrolled in specialist training program	Yes	51 (46%)
	No	59 (54%)
Post-graduate training about advance care planning	Yes	14 (12%)
	No	99 (88%)
		M (SD)
Number of patients discussed completion of resuscitation plan with in last 6 months	With Senior MO	6.0 (12.3)
	Without senior MO	15.2 (24.4)
Number of patients documented resuscitation plan with in last 6 months	With Senior MO	7.5 (17.2)
	Without senior MO	16.0 (24.7)

MO: Medical Officer

Table 2. Self-reported confidence for discussing and documenting resuscitation plans (n=118)

	Strongly Agree N(%)	**Agree N(%)**	**Disagree N(%)**	**Strongly Disagree N(%)**
When discussing resuscitation plans with patients, I have been asked questions that I haven't been able to answer	14 (12%)	73 (62%)	29 (25%)	1 (0.9%)

When discussing resuscitation plans with patients, I have been asked questions I felt unsure about answering	15 (13%)	77 (66%)	23 (20%)	2 (1.7%)
Overall, I feel confident *discussing* resuscitation plans with patients	22 (19%)	70 (60%)	23 (20%)	1 (0.9%)
Overall, I feel confident *documenting* resuscitation plans	31 (26%)	71 (61%)	12 (12%)	1 (0.9%)
Consultants/senior medical staff provide adequate support to me when *discussing* resuscitation plans with patients	13 (11%)	68 (58%)	31 (26%)	5 (4.3%)
Consultants/senior medical staff provide adequate support to me when *documenting* a patient's resuscitation plan	10 (8.5%)	73 (62%)	32 (27%)	2 (1.7%)

Table 3. Number of proportion of participants who correctly and incorrectly identified triggers for discussing a resuscitation plan with a patient (n=118)

	Correct N (%)	Incorrect N (%)
They have a severe chronic illness which is causing recurrent admissions*	116 (98%)	2 (1.7%)
Their recovery is uncertain*	116 (98%)	2 (1.7%)
They are clinically deteriorating and require activation of a Rapid Response System, or are anticipated to do so*	105 (89%)	13 (11%)
The treating clinician would not be surprised if the patient were to die in the next 6-12 months*	112 (95%)	6 (5.1%)
They are frail*	102 (86%)	16 (14%)
They will be undergoing a routine procedure	51 (43%)	67 (57%)
They are aged over 65	31 (26%)	87 (74%)
They have been admitted with a mild infection (i.e. pyelonephritis), but are otherwise well	69 (58%)	49 (42%)
They report memory loss	44 (37%)	74 (63%)
They are admitted to hospital, regardless of their condition	60 (51%)	58 (49%)

(indicates a correct trigger for discussion according to the NSW Health Policy. All remaining items are not formally recognised triggers for discussion).*