Prevalence of mental incapacity in medical inpatients and associated risk factors: cross-sectional study

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Summary

Background Although mental incapacity is becoming increasingly important in clinical practice, little information is available on its frequency in medical inpatients. We aimed to estimate the prevalence of mental incapacity in acutely admitted medical inpatients; to determine the frequency that medical teams recognised patients who did not have mental capacity; and to identify factors associated with mental incapacity.

Methods Over an 18-month period, we recruited 302 consecutive acute medical inpatients. Participants were assessed with the MacArthur competence tool for treatment and by clinical interview. Cognitive impairment was measured by the mini-mental state examination.

Findings 72 (24%) patients were severely cognitively impaired, unconscious, or unable to express a choice and were automatically assigned to the incapacity group. 71 (24%) refused to participate or could not speak English. Thus, 159 patients were interviewed. Of these, 31% (95% CI 24–38) were judged not to have mental capacity. For the total sample (n=302), we estimated that at least 40% did not have mental capacity. Clinical teams rarely identified patients who did not have mental capacity; of 50 patients interviewed, 12 (24%) were rated as lacking capacity. Factors associated with mental incapacity were increasing age and cognitive impairment.

Interpretation Mental incapacity is common in acutely ill medical inpatients, and clinicians tend not to recognise it. Screening methods for cognitive impairment could be useful in detecting those with doubtful capacity to consent.

Introduction

To ensure that consent to medical treatments and investigations is valid, a patient must be suitably informed; their consent must be given voluntarily, and the individual must have mental capacity to make the decision. In most jurisdictions, mental capacity is presumed—eg, in clinical practice, unless the patient shows very obvious signs of a mental or cognitive disorder, clinicians usually do not explicitly assess mental capacity. In the UK, several legal developments have taken place. Whereas mental-health legislation in England and Wales is dealt with under separate statute, researchers have suggested that a revised Mental Health Act should be based on assessment of mental capacity. In the USA, mental incapacity was one criteria for civil commitment under the American Psychiatric Association’s model statute.

Mental capacity is variously defined, but the proposed England and Wales legislation suggests that a patient does not have capacity if there is “an impairment of or disturbance in the functioning of brain or mind” that causes difficulty in decision making because the individual: (1) is unable to understand information relevant to the decision; (2) cannot retain the relevant information; (3) is unable to use this information as part of the decision-making process; or (4) cannot communicate the decision. Mental capacity is situation-specific, so an individual who does not have the capacity to make one decision could have capacity to make another, depending on the risks and benefits associated with the decision and its complexity.

When assessing mental capacity for a specific treatment decision, a clinician could be forced into making a binary decision about the presence or absence of capacity. However, the underlying processes that contribute to decision making are dimensional, and broad consensus suggests that these include understanding, appreciation, reasoning, and ability to express a choice about treatments. Various interviews and rating scales have been devised to assess capacity, many of which focus on these four (or similar) dimensions.

Most samples previously studied for lack of capacity have been homogeneous groups of patients with stable and chronic medical or psychiatric disorders. In studies of this type, individuals with organic disorders such as dementia or those with psychotic illness frequently lack capacity. Mental capacity might also be affected by other psychiatric disorders such as depression, but impairments are probably less frequent in this group. Impairments in capacity in heterogeneous groups such as acutely medically ill patients in hospital have been less extensively studied, yet they contribute a large population in which reduced capacity can be expected. We postulated that lack of capacity can sometimes be overlooked by clinicians, because many patients passively acquiesce to their doctor’s advice and so difficulties remain undetected and might not be perceived by the clinical team. If a doctor doubts a patient’s capacity, he or she might be reluctant to address this possibility explicitly, because to do so could have serious legal, ethical, and practical consequences.
We aimed to establish the prevalence of operationally defined incapacity in a random sample of general adult medical patients; the degree to which clinicians detect incapacity; and demographic and clinical associations of incapacity. We studied a mixed group of acutely ill medical inpatients, because this group of individuals will probably have high levels of cognitive impairment and severe medical illness that would impair capacity, and is a group in which critical treatment decisions generally have to be made quickly.

**Participants and methods**

**Participants**

We obtained local research ethics committee approval for the study. We assessed the prevalence of incapacity in a mixed sample of adults (age 18 years or older) admitted non-electively under one medical firm to two acute general medical wards in a London teaching hospital over an 18-month period, who had any current diagnosis and treatment plan. Every week, we selected a sample of those eligible by numbering all consecutive ward admissions and using a random numbers table. Inpatients agreeing to participate were interviewed by VR between 48 h and 7 days after admission. We obtained written consent for all those interviewed.

**Measurement of capacity**

If the participant was unable to take part in the interview because he or she was unconscious, otherwise unable to communicate, or so cognitively impaired as to be unable to recall his or her own date of birth, we automatically judged them not to have capacity. For those able to respond, we used the MacArthur competence assessment tool for treatment (MacCAT-T) and vignettes based on those in the thinking rationally about treatment (TRAT) research method.

MacCAT-T is a semi-structured interview that measures: (1) understanding of the disorder and its treatment, including associated benefits and risks; (2) appreciation of the disorder and its treatment—ie, how the patient understands they could be specifically affected, which usually entails some level of insight; (3) reasoning, which assesses the processes behind the decision and ability to compare alternatives in view of their consequences; and (4) the ability to express a choice. During the interview, the researcher (VR) provided information to the patient on the patient’s condition, proposed treatment, and associated risks and benefits of treatment.

For our assessments, we defined current treatment as the most recently used intervention to treat the main reason for admission. When there was more than one reason for admission, we asked the clinical team to identify the most important indication. When more than one treatment had been given, VR identified the one that she judged to carry the greatest risk of harm (in terms of a combination of severity and likelihood) to the patient. If VR had any doubt about the most harmful treatment she asked the clinical team responsible for the patient’s care. We gathered information on risks and benefits of treatment from the clinical team and, in the case of drug treatments, from the British National Formulary. This information was provided in a structured manner during the course of the MacCAT-T.

We made one alteration to the MacCAT-T. We did not judge it appropriate for the research team to provide diagnostic information; therefore we dropped the “understanding of disorder” component of the interview, and the understanding dimension is on a scale of 0–4 instead of the usual 0–6. The MacCAT-T rating assists in detection of inadequacies in any of the four areas mentioned above, but it does not give a global rating and is supposed to be used in conjunction with clinical assessment. This capacity measure and those that include clinical vignettes shown to patients have been used to estimate the prevalence of incapacity in patients with life-threatening illnesses and major mental disorders such as depression with a high degree of inter-rater reliability. Patients with life-threatening illnesses show a level of capacity equivalent to healthy controls. The TRAT questionnaire entails answering questions about a vignette that describes a fictional person required to make a decision about his or her medical treatment. Scoring focuses on the quality of that advice by measuring similar components to the MacCAT-T—ie, seeking information, consequential thinking, comparative thinking, complex thinking, and generating consequences. VR rated the MacCAT-T and TRAT before undertaking further assessments, described below.

For our assessments, interviews were audiotaped and transcribed. Six researchers (four consultant psychiatrists [AB, ASD, SW, MH], a specialist registrar in psychiatry [VR], and a consultant clinical psychologist [PH]) rated a subsample of 40 transcribed interviews to check for inter-rater reliability. The raters made the assessments independently without conferring and were not given any further information. We obtained a mean κ of 0.76. Reliability will be reported in greater detail in another paper. Thereafter, the researcher undertaking the interview (VR) ascertained whether patients had capacity based on their performance in the interview. VR had good inter-rater reliability with the other investigators (mean κ 0.80, range 0.61–0.94). When she was in doubt about capacity (n=43), a consensus decision was made based on the typed transcripts of interviews. This consensus meeting consisted of four consultant psychiatrists and a consultant clinical psychologist, and a majority decision was made to categorise patients into either group. The raters had the transcripts of the MacCAT-T (which contained some information on current medical illness) and TRAT, but no information on the cognitive state or psychiatric
history of the participant was provided, to prevent observer bias.

To elicit the global impression of a patient’s ability to make choices about treatment (not specific to one treatment), we identified their nearest relative or next of kin and where possible asked them: “Do you think the patient is able to make decisions regarding his or her current treatment?” We asked the medical senior house officer the same question. The respondents were unaware of the results of VR’s assessment, including her assessment of cognitive ability.

We obtained demographic and clinical information about all participants from case notes. Clinical information included main diagnosis, total diagnoses, total medications, and whether the reason for admission was a new diagnosis or an established one. We used the mini-mental state examination (MMSE) as a basic test of cognitive abilities, which has been validated widely in different clinical populations and age-groups, and the brief psychiatric rating scale (BPRS) to assess the effect of psychiatric symptomatology.

Statistical analysis
To account for the sample who did not participate in the interviews, we calculated prevalences with 95% CIs for the outcome (mental incapacity) by different approaches. For the interviewed sample, we compared individuals who were judged to lack capacity with those who had capacity with the χ² test for categorical variables and independent sample t tests or Mann-Whitney U tests for continuous variables. To identify independent associations for incapacity we did logistic-regression analysis. We fitted successive models, and variables not associated with the outcome (capacity status) at p<0.2 were dropped from further models. We first entered sociodemographic variables (age, sex, ethnic origin, and whether the participant was living independently) and then added clinical variables (total score on MMSE, psychiatric diagnosis, number of comorbid medical diagnoses, number of drugs, and whether admission was for a new illness or an established one). Finally, we added capacity ratings by observer bias.

Role of the funding source
The sponsor of the study had no role in study design, data collection, data analysis, data interpretation, or writing of the report. The corresponding author had full access to all the data in the study, and had final responsibility for the decision to submit for publication.

Results
During the 18-month test period, 2000 patients were admitted to the participating wards, of whom 1606 were admitted for at least 48 h. 302 were included in the study. Of these, 143 were not interviewed: reasons included unconsciousness (n=14; 5%); unable to express a choice because of communication difficulties (n=19; 6%); and severe cognitive impairment (n=39; 13%). 16 patients (5%) could not communicate adequately in English to complete the interview and 55 (18%) refused to participate.

Table 1 shows the demographic characteristics of the 159 patients who were interviewed. This group (76 men, 83 women) had a mean age of 64.2 years (SD 19.9). 133 (84%) were white European, 23 (15%) African-Caribbean, one (1%) Asian, and two (1%) Greek-Cypriot. Three-quarters of the participants were either living alone independently (n=52; 33%) or living with family.
members (66; 42%)—these two groups we categorised as living independently; the remainder were either living alone and receiving social service support (21; 13%) or living in supported accommodation (20; 12%). Mean time spent in education was 10-9 years (SD 2-6). Patients who did not have capacity were older, less likely to be living independently, and had fewer years of education compared with those with capacity. No significant associations were noted between capacity and sex, ethnic origin, marital status, first language, and social class.

We categorised the total sample into those who were interviewed (n=159), those who could not be interviewed because of communication difficulties, severe cognitive impairments, or poor English (88), and those who refused to participate (55). Patients who were interviewed were younger than those in the other two groups (64 years vs 70 years [unable to interview] and 68 years [refusers]; p=0-07 for heterogeneity) and were more likely to be men (48% vs 43% [unable to interview] and 35% [refusers]; p=0-3 for heterogeneity). The prevalence of cerebrovascular accident was highest in patients who could not be interviewed (25%) compared with those who were interviewed (8%) and those who refused (2%; p=0-0001 for heterogeneity).

Table 2 shows the clinical characteristics of the patients who were interviewed. Of this sample, 107 (67%) had more than one medical diagnosis. The most typical diagnoses were cardiovascular (n=71; 45%) and respiratory (50; 31%) disorders, and infections (32; 20%). Patients without capacity were more likely to have a new diagnosis compared with those with capacity, but no difference was recorded between the groups in total number of diagnoses. Infections and neurological disorder were more prevalent in patients without capacity. 14 patients (9%) had a psychiatric diagnosis (excluding dementia or delirium) recognised from the case notes. The mean score on the BPRS was 28·5 (SD 4·6), which rose to 32·3 (6·2) in those with a psychiatric diagnosis. No difference was noted in rates of overt psychiatric disorder between patients with and without capacity, and no differences were reported in total BPRS score. 156 (98%) patients were taking some form of medication. No significant associations were seen between type of drug prescribed and capacity (data not shown). The median MMSE score was 27 (out of 30; IQR 23–29), with 40 (25%) patients having a score suggesting significant cognitive impairment (MMSE score <24). Patients who did not have capacity had significantly lower scores on the MMSE (median score 22 vs 29 in those with capacity), indicating higher rates of cognitive impairment in this group.

Table 3 shows the prevalence of patients thought to lack capacity in those not interviewed, making different assumptions about probable rates of incapacity in those not interviewed. Table 4 shows ratings of capacity. Patients judged to lack capacity scored considerably less well on individual capacity ratings (Table 4).

### Table 3: Prevalence of incapacity

<table>
<thead>
<tr>
<th>Patients without capacity/</th>
<th>Prevalence of incapacity (%)</th>
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<tbody>
<tr>
<td>total patients</td>
<td>[95% CI]</td>
</tr>
<tr>
<td>Interviewed group</td>
<td>59/159 (37.4)</td>
</tr>
<tr>
<td>Total sample (assumption 1)</td>
<td>122/302 (40.4)</td>
</tr>
<tr>
<td>Total sample (assumption 2)</td>
<td>144/302 (47.8)</td>
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Assumption 1: patients not interviewed because of unconsciousness, communication difficulties, or severe cognitive impairment all do not have capacity; those not interviewed owing to refusal or non-English language all have capacity. Assumption 2: patients not interviewed because of unconsciousness, communication difficulties, or severe cognitive impairment all do not have capacity; those not interviewed owing to refusal or non-English language lacked capacity at same rate as interviewed sample.

### Table 4: Individual capacity ratings (interviewed sample)

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<tr>
<th>MacCAT-T reasoning summary rating</th>
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<tr>
<td>0</td>
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<tr>
<td>0</td>
</tr>
<tr>
<td>Mean score (SD)</td>
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<tr>
<td>MacCAT-T appreciation summary rating</td>
</tr>
<tr>
<td>0</td>
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<tr>
<td>0</td>
</tr>
<tr>
<td>Mean score (SD)</td>
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<tr>
<td>MacCAT-T modified understanding summary rating</td>
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<tr>
<td>0</td>
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<tr>
<td>0</td>
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<tr>
<td>Mean score (SD)</td>
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## Table 5: Associations of incapacity

<table>
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<th>Adjusted odds ratio (95% CI)</th>
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<tr>
<td>Age (years)</td>
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<tr>
<td>MMSE</td>
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Relative thinks participant does not have capacity 3 (1.1-8.8)
the understanding, appreciation, and reasoning summary scores of the MacCAT-T compared with those with capacity. Our assessment of capacity, based on the semi-structured interview compared poorly with that of clinicians (κ=0.30) or relatives (κ=0.30).

To determine which variables were independently associated with lack of capacity, we did a logistic-regression analysis. Three variables were independently associated: increasing age, cognitive impairment, and whether a relative recognised the patient did not have capacity (table 5).

Discussion

We have shown that lack of capacity to make treatment decisions is common in medical inpatients. The prevalences we reported are higher than those described in other samples of medical inpatients.12,22 In one study,17 37% of patients who were assessed did not have capacity; however, that report was not a prevalence study because patients who the clinician was confident had capacity were excluded. Appelbaum and Grisso22 sampled people younger than 70 years who were being evaluated or treated for ischaemic heart disease and reported no evidence of impaired mental capacity. Our sample was older than in that study and participants were acutely medically ill.

We noted that incapacity was rarely detected by clinicians or relatives. We recorded strong and expected associations between lack of capacity and increasing age and diminishing cognitive function. These factors, in association with the nearest relative’s views, were the only independent associations of incapacity. Our findings about cognitive impairment accord with other work.23,24 A review by Christensen and colleagues25 noted that studies repeatedly linked impaired decision-making capacity with increasing age, and this association was amplified by lower educational level and physical illness.

Several methodological issues might have affected our results. We modified the MacCAT-T such that we did not rate understanding of disorder, because rating this component of capacity was not practicable with the present study design. Although we were able to rate mental capacity with high inter-rater reliability, the MacCAT-T is not designed to give a definitive decision on the presence or absence of capacity. The researchers who developed the interview emphasised that it should be used as an indicator of possible areas of deficiencies in decision making rather than in isolation as a determinant of legal capacity, which should be further considered clinically. However, clinical decisions or legal rulings about capacity have to be categorical, and we believe that using the MacCAT-T assisted in making such decisions in a systematic manner. Ultimately, there is no gold standard that can be applied systematically in research. Little is known about how a clinician’s judgment of capacity is affected by his or her perception of the risks and benefits of the proposed intervention.

The usual view has been that clinicians need higher levels of capacity when more is at stake.26 In our study, risks and benefits could not be thoroughly evaluated. Therefore, in some instances when we judged that an individual did not have capacity, the benefits of the treatment could have been minor and the risks negligible, and therefore the threshold for stating that the patient did not have capacity should have been set higher. Nonetheless, we believe the method we used was rigorous and indicated an approach that is clinically relevant. At the very least, we have shown that a high proportion of acutely ill individuals in a general hospital setting would have significant difficulties making complex treatment decisions.

Our sample consisted of elderly patients, which reflects the population of general medical wards in the UK. A group of people admitted for elective procedures would have yielded different results. Our sample only included those who were in hospital for at least 48 h, for logistical reasons, so we will have missed a proportion admitted for less time (20% in our sample). This omission could have biased the sample towards those with greater social or placement difficulties, or more complex medical disorders, leading to an exaggeration of the prevalence of individuals without capacity.

When we asked clinical teams for their assessment of patients’ capacity, we usually approached junior medical staff. Their difficulty identifying patients who did not have capacity could indicate less experience rather than a considered team decision. The assessment of capacity made in our interviews was confined to a specific treatment, whereas that of the relative or clinician was a more global judgment; furthermore, the interviewer was aware of the results of the MMSE, whereas clinicians and relatives were not. These two differences might have accounted for the apparent underestimation of incapacity by clinicians and relatives.

In the case of Ms B,27 English High Court judge Dame Elizabeth Butler-Sloss warned of the “serious danger” of “benevolent paternalism which does not embrace recognition of . . . personal autonomy”, and decried the supposed tendency for clinicians to view appropriate responses (such as anger) and decisions at odds to theirs as evidence of incapacity. Our study suggests that in routine clinical practice, doctors most usually fail to identify that patients with significant cognitive impairment do not have capacity. If we accept that a high proportion of acutely ill medical inpatients do not have mental capacity to make decisions about current treatment, our findings have implications for clinical practice, legislation, and the doctor-patient relationship. The current position is to assume capacity unless there is strong evidence to the contrary. We suspect that a substantial proportion of patients with decisional difficulties place their trust in doctors, and passively acquiesce with treatment plans. Thus, incapacity is frequently overlooked. Does this matter? From one
Articles

perspective we could argue that the issue of capacity is only highlighted when a patient refuses recommended treatments. Such circumstances are rare and did not arise in our consecutive sample of more than 300 admissions.

High-profile cases hinging on capacity issues represent only a few of the patients treated in general hospitals in whom capacity is in doubt. There is a danger of responding to these rare cases with legislation that would apply to most patients without capacity treated in the general hospital. Legislation can cause unforeseen difficulties: in Scotland, there is anecdotal evidence that family doctors providing cover for nursing homes have found it impossible to make capacity assessments on all patients, endangering routine care such as influenza vaccinations and forcing a review of the code of practice. Many patients in our study who were judged to lack capacity were content to put their trust in the doctors and nurses managing their care. Is it necessary to impose further legislation in the absence of evidence that incapacitated patients are receiving treatment against their best interests?

An alternative view is that these high rates of incapacity suggest that more should be done to protect the interests of a vulnerable group of patients. Compared with the legal checks that exist in UK mental-health legislation, the high proportion of medical patients who are treated without being able to give valid consent is striking, with very few checks being in place. We suspect that while doctors can fail to recognise explicitly that a patient does not have capacity, they generally covertly understand that the patient finds a decision difficult to make. Not explicitly identifying and addressing the fact that a patient might not have capacity can lead to undesirable practices, such as deciding a patient should be “not for resuscitation” without proper discussion with the patient or his or her family. For other common and important decisions—such as irreversible surgical procedures and placement in a nursing home—proper assessment of mental capacity seems an especially important part of routine medical care. We suggest that clinicians should be aware of the possibility that the patient does not have capacity when such decisions are being considered, and make a fuller assessment of decision-making abilities.

We reported that increasing age, cognitive impairment, and recognition by a relative of an absence of capacity are independently associated with lack of mental capacity, and a sensible step would be to assess and document mental capacity when important decisions are to be made, especially in high-risk patients. Although these variables are associated with lack of capacity, we should emphasise that many elderly patients with significant cognitive impairments still have capacity. Further, many individuals we thought did not have capacity to make treatment decisions when acutely ill might be capable of making other important future choices, such as whether to go into a nursing home when they have recovered from their acute illness. Additional caution needs to be taken with people with communication and language difficulties who were excluded from our detailed assessments.

A substantial proportion of inpatients in any general medical ward do not have capacity to make informed treatment decisions, a situation that is rarely recognised by doctors. If a legal approach to solve this problem is too heavy-handed—eg, requiring patients to be more explicitly identified and protected—then people who would be affected by such legislation could be adversely affected. However, to accept the passive acquiescence of such patients as evidence of true consent would be dangerous when important and irreversible decisions need to be made. Before making such decisions, the clinician should have considered the possibility that the patient is unable to give valid consent.

Contributors
V Raymont obtained and analysed data, coordinated the study, and wrote the report. W Bingley designed the protocol and edited the report. A Buchanan, A S David, P Hayward, and S Wessely designed the protocol, did outcome assessments, and edited the report. M Hotopf was principal investigator, designed the protocol, did outcome assessments, analysed data, and wrote the report.

Conflict of interest statement
We declare that we have no conflict of interest.

Acknowledgments
This study was funded by the Wellcome Trust. We thank the clinicians and patients who participated.

References
1 Adults with Incapacity (Scotland) Act, 2000.
2 Draft Mental Incapacity Bill. CNS8597-1. 2003.
27 Dyer C. Unlawfully treated woman to move to new unit. *BMJ* 2002; 324: 753.