



**Mental Capacity for Medical Treatment Decisions
in Medical and Surgical Hospital Inpatients in Ireland**

A thesis submitted to

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Doctor in Medicine

Ruth Murphy

School of Medicine

The University of Dublin, Trinity College

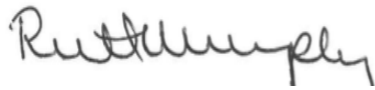
June 2019

Declaration

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Summary

Mental capacity both merits and requires substantial consideration and attention in present-day clinical practice, research and legislation. This is the first research study in the Republic of Ireland to evaluate the prevalence of mental capacity in general medical and surgical hospital inpatients, incorporating a considerable patient population (n=300) and including individuals from both an urban and rural catchment area in Ireland. The significant rate of mental incapacity in this cohort of individuals (27.7% of all study participants; n=83) indicates the frequency of this complex issue and furthermore, underscores the importance of commencing Ireland's new mental capacity legislation, the Assisted Decision-Making (Capacity) Act 2015, which has been passed by Parliament and signed into law by President Michael D. Higgins, but to date awaits inauguration and implementation. Once executed and effected, this Act will provide imperative assistance and guidance to both healthcare and judicial staff in relation to all facets of the assessment, evaluation, determination and management of an individual's mental capacity and capability to consent. As the rate of mental incapacity among general hospital inpatients in this Irish research study is essentially consistent with those reported in other international jurisdictions, there is undoubtedly a need to pay specific attention to this fundamental and imperative aspect of patient care, by promoting advance healthcare planning, by also devising national policies and protocols to be implemented when an individual lacks or may shortly mental capacity for medical treatment decisions and ultimately, to safeguard as much as is achievable, an individual's right to autonomy during the inclusive decision-making process.

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Dedication

I would like to dedicate this thesis to my father Eamonn, a proud former graduate of Trinity College Dublin, who has encouraged and supported me through my many years of education. Without him and his continued help, guidance, reassurance and enthusiasm, this would not have been possible.

Publications and conference proceedings arising from this work

Publications

Murphy, R., Fleming, S., Curley, A., Duffy, R.M., Kelly B.D. Who can decide? Prevalence and correlates of mental incapacity for treatment decisions in medical and surgical hospital inpatients in Ireland. QJM: An International Journal of Medicine, 2018, 881-885

Murphy, R., Fleming, S., Duffy, R.M., Kelly, B.D. Convergence or divergence? Comparing mental capacity assessments based on legal and clinical criteria in medical and surgical inpatients. Accepted to the Journal of Legal Medicine, May 2019. In press.

Conference proceedings

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Chapter 1: Introduction

1.1 Capacity legislation in Ireland – past, present and future

On December 30th 2015, President Michael D. Higgins, President of the Republic of Ireland, signed the Assisted Decision-Making (Capacity) Act 2015 into Irish Law (Government, 2015). This contemporary piece of legislation has been the conclusion and achievement of many years of significant determination and effort and is correspondingly, the enterprise and undertaking of multiple national stakeholders and agencies, including the Department of Justice and Equality, the Department of Health, the Mental Health Commission, the National Disability Authority, the Director of the Decision Support Service and the Court Service. This Act is the most significant advancement in Irish capacity legislation in over a century and with this legislative implementation, the Assisted Decision-Making (Capacity) Act 2015 will incorporate the principal intention to restructure and streamline the provision of decision-making assistance to those individuals who may require additional support exerting their decision-making capacity and consequently, will enable such individuals to maintain the utmost amount of autonomy in circumstances where they lack or may shortly lack capacity (Kelly, 2015, Kelly, 2017).

Furthermore, the Assisted Decision-Making (Capacity) Act 2015 is an immense and substantial realization by the numerous concerned individuals involved in this process of the required and obligatory amendments and enhancements that have been long desired for the current and existing Irish capacity legislation. This contemporary capacity legislation, once implemented, will ensure the legal entitlement and ultimate

requirement of all social and health service providers in Ireland to systematically assist an individual in making their own decision(s) through the provision of a variety of support services, will safeguard an individual's right to self-determination and autonomy as much as is feasible through the introduction of additions to the current legislation, including the potential for Advance Healthcare Directives and Enduring Power of Attorney, will lawfully acknowledge additional decision-makers to support and assist an individual in the decision-making process and most importantly, will stipulate for the review of all existing individuals currently under the Ward of Court system to either be emancipated completely from this scheme or alternatively, to be transitioned to this new structure of decision-making assistance as outlined in the Assisted Decision-Making (Capacity) Act 2015 (Kelly, 2015, Kelly, 2017, Government, 2015, Executive, 2018).

It is also proposed and projected that a Decision Support Service will be established following the introduction of the Assisted Decision-Making (Capacity) Act 2015, with promotion and dissemination of information and awareness of this updated capacity legislation to the Irish public envisioned to be one of the primary and core intentions of this office (Executive, 2018). Accordingly, the inauguration and application of this apprised capacity legislation will have significant implications in the Republic of Ireland for patients, family members and healthcare professionals and furthermore, emphasises the multifaceted and complex decision-making processes required by patients, family members, healthcare staff, healthcare organizations and Circuit Court judges (Kelly, 2017, Donnelly, 2016). Once implemented, the Assisted Decision-Making (Capacity) Act 2015 will be indispensable in the assessment, treatment and management of all those individuals deficient in mental capacity for treatment decisions, including

hospital inpatients, nursing home residents and individuals under the community care of General Practitioners.

Upon commencement, the Assisted Decision-Making (Capacity) Act 2015 will replace the currently applied capacity legislation in Ireland of the Ward of Court system accompanying the Lunacy Regulation (Ireland) Act of 1871 (Government, 1871), with a Ward of Court additionally defined as a person who is unable to manage his or her own affairs due to mental incapacity (Ireland, 2019). The Lunacy Regulation (Ireland) Act 1871 is broadly acknowledged to be an antiquated piece of legislation that comprises an inadequate description of mental capacity itself, encompasses an all-or-nothing definition of mental capacity, is unsatisfactory and insufficient with regards to the provision of change or review in an individual's capacity over time, includes problematic facilities for the inclusion of decision-making assistance and conclusively and inappropriately embraces ultimate jurisdiction associated with the individual and all accompanying matters in relation to the 'person and estate' of this individual who is deemed to lack mental capacity (Kelly, 2011, Kelly, 2015, Government, 1871).

Prior to the development of the Assisted Decision-Making (Capacity) Act 2015 and in current Irish clinical practice, hospitalised and community based patients lacking mental capacity for medical decision-making have been assessed, evaluated and managed predominantly on an informal basis by a physician and the associated multidisciplinary team and habitually without the requirement for a formal and legal application for treatment under the Lunacy Regulation (Ireland) Act 1871 and the accompanying Ward of Court system. This is evidently illustrated by the number of applications for Wardship per year (approximately 2,500) (Ireland, 2019), in comparison with the total number of discharges by acute public hospitals in 2016 (1,704,452) (Office, 2017). In clinical terms

and in its most elementary definition and configuration, mental capacity and the ability of an individual to consent has been summarized into three main fundamental considerations, the philosophical approach, the legal approach and the psychiatric approach (Owen et al., 2009), or alternatively, as a combined and coalesced legal, clinical, ethical and social concept (Hotopf, 2005). The mental capacity of a patient can exist on a continuum, is grounded on the process of the individual's decision-making ability and not on the final decision itself, is exclusive to a specific decision at a specific time and ultimately is persuaded by a multiplicity of influences, including situational, educational, literacy, emotional, cultural, linguistic, psychosocial, communication, psychiatric, neurological and especially physician-patient factors (Sessums et al., 2011, Murphy et al., 2018, Hotopf, 2005, Jones and Holden, 2004, Supady et al., 2011, Amalraj et al., 2009, Meynen, 2011).

However, in modern day to day clinical practice and with the frequent necessity to determine patient capacity to consent to medical treatment and furthermore, in Ireland without current fit for purpose and appropriate legislation in this area, doctors formerly and presently continue to employ the core medical ethics and values of good clinical practice, the presumption of patient competence and the overarching medical principle of beneficence, when assessing and judging a patient's mental capacity to consent to medical or surgical treatment (Hillery et al., 1999, Leonard and McLaughlin, 2009). More precisely and in more explicit terms, the existing evaluation and determination of patient capacity to consent favours and embraces a patient-centred and 'best interest' foundation, operates on a model of informed patient consent when deliberating treatment options and decisions by providing all relevant and necessary information to the individual, aims to optimise physician-patient interaction with an authentic communication and negotiation

approach intended to minimise communication barriers, incorporates an open ended questioning style on screening and ultimately remains a physician-patient clinical encounter with the fundamental acknowledgement of patient autonomy and self-sufficiency as much as is ethically and feasibly possible (Hillery et al., 1999, Berghmans et al., 2004, Ganzini et al., 2005, Donnelly, 2016, Leonard and McLaughlin, 2009, Roca, 1993, Owen et al., 2009, Buchanan, 2004, Simon, 2007, Church and Watts, 2007, Lo, 1990, Moye et al., 2006, Rayment, 2002, Supady et al., 2011).

It also has to be distinctly acknowledged that the process of medical decision-making during the physician-patient interaction is an exceptionally personal and significant interaction, based on a foundation of trust, compassion, empathy and communication (Supady et al., 2011, Hermann et al., 2017). Conversely, this physician-patient relationship can have deleterious consequences during the process of mental capacity and decision-making assessment if unique individual patient factors and elements are minimised or overlooked, including sensory, cognitive, psychiatric, emotional, educational and intergenerational influences (Amalraj et al., 2009, Meynen, 2011). Additionally, optimum health literacy, defined “as a constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the health care environment” (Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs, 1999), among all hospitalised patients has been shown to have a substantial influence on informed, efficient and competent medical decision-making throughout the physician-patient clinical interaction to determine mental capacity status (Amalraj et al., 2009, Kickbusch, 2001). In determining capacity to consent to medical treatment, physicians have also utilized the broadly acknowledged functional and legally defined capabilities necessary for decision-making, including the ability to understand the

appropriate information required to communicate a treatment choice, together with a degree of proficiency for patient appreciation and reasoning surrounding the treatment choice(s) available to them (Kim, 2013, Moye and Marson, 2007, Grisso and Appelbaum, 1995, Grisso and Appelbaum, 1998).

Due to the undeniable and undisputed complex nature of this subject matter, together with the necessity to provide guidance and assistance to all healthcare professionals working in the current Irish healthcare service in the present-day operational absence of the Assisted Decision-Making (Capacity) Act 2015 and therefore with merely the Ward of Court system associated with the Lunacy Regulation (Ireland) Act 1871 as a guide for clinical practice, the Health Service Executive of the Republic of Ireland has previously outlined a policy document in relation to decision-making capacity and consent in the Irish healthcare setting. The National Consent Policy is a document that can be referenced and employed by clinicians and healthcare staff in informal clinical circumstances when confronted with a clinical scenario encompassing disputed patient capacity and consent. This document outlines guidance to all healthcare staff in relation to both the social and healthcare interventions accessible for patients, assistance to individuals receiving care and/or treatment in a hospital setting, together with information and guidance in relation to individuals in either community or residential placements and furthermore, summarises the key elements for valid patient consent, including decision-making capacity, disclosure of information, comprehension, voluntariness and agreement (Executive, 2017). However, this document remains just that, a reference and guidance tool in relation to the clinical complexities of an individual's capacity and ability to consent and nonetheless, assigns a physician with the equivalent difficulties as previously outlined and with the same exclusive alternative of Ward of Courtship if sustained mental

incapacity in an individual is portrayed. Therefore, when obligatory and when a treating physician is caring for a patient that is consistently and repetitively lacking mental capacity for medical treatment decision-making upon recurring assessment, an application under the Ward of Court system associated with the Lunacy Regulation (Ireland) Act of 1871 is currently required.

However, preceding the development of the Assisted Decision-Making (Capacity) Act 2015, it was extensively recognised in both clinical and legal communities that the Ward of Courtship system and the narrative of mental capacity as outlined in the Lunacy Regulation (Ireland) Act of 1871 was no longer fit for purpose, that the definition of mental capacity and the associated Lunacy Regulation (Ireland) Act legislation was deficient in the provision of fundamental human rights for those individuals in receipt of mental capacity assistance under this legislative agenda and therefore in need of considerable amendments (Kelly, 2015, Kelly, 2017, Donnelly, 2016). Consequently, inauguration and employment of the Assisted Decision-Making (Capacity) Act 2015 will permit the Republic of Ireland to have greater accordance with the United Nations Convention on the Rights of Persons with Disabilities (Assembly, 2006), which delineates that it ought to be affirmed that those persons with disabilities have the right to recognition everywhere as persons before the law, states that parties should acknowledge that individuals with disabilities enjoy legal capacity on an equal basis with others in all aspects of life, that parties should take all suitable and operational actions to ensure the equal rights of persons with disabilities to own or inherit property and that those individuals are not arbitrarily deprived of their property, states the rights of such individuals to regulate their own financial affairs and that parties should take appropriate

procedures to provide access by persons with disabilities to the assistance that they may require in exercising their legal capacity (Assembly, 2006).

Article 12 of the United Nations Convention on the Rights of Persons with Disabilities further states that parties should certify that “all measures that relate to the exercise of legal capacity provide for appropriate and effective safeguards to prevent abuse in accordance with international human rights law, that such safeguards shall ensure that measures relating to the exercise of legal capacity respects the rights, will and preferences of the person, are free of conflict of interest and undue influence, are proportional and tailored to the person’s circumstances, apply for the shortest time possible, are proportional to the degree to which such measures affect the person’s rights and interests and are subject to regular review by a competent, independent and impartial authority or judicial body” (Assembly, 2006). Implementation of the Assisted Decision-Making (Capacity) Act 2015 will therefore entrust the Republic of Ireland’s acknowledgement and recognition of the universal principals delineated in the United Nations Convention on the Rights of Persons with Disabilities, “to promote, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities, and to promote respect for their inherent dignity” (Assembly, 2006).

In contrast to the Lunacy Regulation (Ireland) Act of 1871, the phraseology of the Assisted Decision-Making (Capacity) Act 2015 embraces a guiding principle of presumption of mental capacity in all individuals, further demarcates that the individual in question ought not to be judged to lack mental capacity due to the making of an imprudent or ill-advised decision and unless all achievable steps have been taken without success to assist the individual (Government, 2015). The 2015 Act further states that any

interventions employed in relation to the person should be the least obstructive to the individual's rights and freedom of action, does not reference the 'best interests' of the individual but places the 'will and preferences' of persons with impaired mental capacity at the heart of all decision-making in relation to 'personal welfare' (including healthcare) and 'property and affairs' (Government, 2015). Capacity, defined as mental capacity in the Assisted Decision-Making (Capacity) Act 2015, is therefore to be 'construed functionally', that is, it is person-specific, time-specific and decision-specific, with all interventions intended to be 'in good faith and for the benefit of the relevant person' (Appendix E).

The Assisted Decision-Making (Capacity) Act 2015 delineates that a person lacks capacity to make a decision if he or she is unable:

- (a) To understand the information relevant to the decision;
- (b) To retain that information;
- (c) To use or weigh up that information as part of the process of making the decision; or
- (d) To communicate his or her decision (whether by talking, writing, using sign language, assisted technology, or any other means) or, if the implementation of the decision requires the act of a third party, to communicate by any means with that third party.

In the origination and development of the Assisted Decision-Making (Capacity) Act 2015, a number of guiding principles were core to the inclusive nature of this piece of capacity legislation (Government, 2015):

- The principles shall apply for the purposes of an intervention in respect of a relevant person and the intervener shall give effect to those principles accordingly.
- It shall be presumed that a relevant person who falls within the definition of relevant person has capacity in respect of the matter concerned unless contrary is shown in accordance with the provisions of this Act.
- A relevant person who falls within the definition of relevant person shall not be considered as unable to make a decision in respect of the matter concerned unless all practicable steps have been taken, without success, to help him or her to do so.
- A relevant person who falls within the definition of relevant person shall not be considered as unable to make a decision in respect of the matter concerned merely by reason of making, having made, or being likely to make, an unwise decision.
- There shall be no intervention in respect of a relevant person unless it is necessary to do so having regard to the individual circumstances of the relevant person.
- An intervention in respect of a relevant person shall be made in a manner that minimises the restriction of the relevant person's rights and freedom of action, have due regard to the need to respect the right of the relevant person to dignity, bodily integrity, privacy, autonomy and control over his or her financial affairs and property, be proportionate to the significance and urgency of the matter the subject of the intervention and be as limited in duration as far

as is practicable after taking into account the particular circumstances of the matter the subject of the intervention.

- The intervener, in making an intervention in respect of a relevant person, shall permit, encourage and facilitate, in so far as is practicable, the relevant person to participate, or to improve his or her ability to participate, as fully as possible in the intervention, to give effect, in so far as is practicable, to the past and present will and preferences of the relevant person, in so far as that will and those preferences are reasonably ascertainable, take into account the beliefs and values of the relevant person, in so far as those beliefs and values are reasonably ascertainable and any other factors which the relevant person would be likely to consider if her or she were able to do so. The intervener should also consider the views of any person named by the relevant person as a person to be consulted on the matter concerned or any similar matter, act at all times in good faith and for the benefit of the relevant person and consider all other circumstances of which he or she is aware and which it would be reasonable to regard as relevant.
- The intervener may consider the views of any person engaged in caring for the relevant person, any person who has a *bona fide* interest in the welfare of the relevant person, or healthcare professionals.
- In the case of an intervention in respect of a person who lacks capacity, regard shall be had to the likelihood of the recovery of the relevant person's capacity in respect of the matter concerned and the urgency of making the intervention prior to such recovery.

- The intervener shall not attempt to obtain relevant information that is not reasonably required for making a relevant decision, shall not use relevant information for a purpose other than in relation to a relevant decision and shall take reasonable steps to ensure that relevant information is kept secure from unauthorised access, use or disclosure and is safely disposed of when he or she believes it is no longer required.

Additionally, the Assisted Decision-Making (Capacity) Act 2015 has been updated in relation to the provision of decision-making assistance to the individual concerned and furthermore, delineates three levels of supported decision-making (Government, 2015):

1. ‘Assisted decision-making’

- Outlines the ability of an individual ages 18 years or over, “who considers that his or her capacity is in question or may shortly be in question may appoint another person who has also attained that age to assist the first-mentioned person in making one or more than one decision on the first-mentioned person’s personal welfare or property and affairs, or both”.
- The 2015 Act further outlines that, “decision-making authority remains with the appointer who will be actively assisted in accessing information, in understanding the information, in making and expressing decisions on matters specified in the agreement, and in implementing decisions made”, and that, “a decision-making assistance agreement may be revoked by the appointer or by the decision-making assistant at any time and, subject to agreement between the appointer and the decision-making assistant, may be varied at any time”.

2. ‘Co-decision-maker’

- A co-decision-making agreement can be initiated by a person, “who considers that his or her capacity is in question or may shortly be in question”, and that person, “may appoint a suitable person who has also attained that age to jointly make one or more than one decision on the first-mentioned person’s personal welfare or property and affairs, or both”.
- A person is suitable for appointment as a co-decision-maker if he or she, “is a relative or friend of the appointer who has had such personal contact with the appointer over such period of time that a relationship of trust exists between them and is able to perform his or her functions under the co-decision-making agreement”.
- The 2015 Act further outlines that, “in exercising his or her functions as specified in the co-decision-making agreement, a co-decision-maker shall advise the appointer by explaining relevant information and considerations relating to a relevant decision, ascertain the will and preferences of the appointer on a matter the subject of, or to be the subject of, a relevant decision and assist the appointer with communicating the appointer’s will and preferences, assist the appointer to obtain the appointer’s relevant information, discuss with the appointer the known alternatives and likely outcomes of a relevant decision, make a relevant decision jointly with the appointer and make reasonable efforts to ensure that a relevant decision is implemented as far as practicable”.
- Furthermore, “a co-decision-maker shall not have authority to make decisions jointly with a relevant person other than the relevant decisions specified in the co-decision-making agreement”.

- A Circuit Court examination may be required for appointing a ‘co-decision-maker’. A co-decision-making agreement, “whether registered or not, may be revoked in whole or in part at any time by the appointer or the co-decision-making, or both”.

3. **‘Decision-making representative’**

- A Circuit Court examination will be required for appointing a ‘decision-making representative’. Upon receipt of an application, the court may make one or both of the following declaration, (a) “a declaration that the relevant person the subject of the application lacks capacity, unless the assistance of a suitable person as co-decision maker is made available to him or her, to make one or more than one decision specified in the declaration relating to his or her personal welfare or property and affairs, or both”, and/or, (b) “a declaration that the relevant person the subject of the application lacks capacity, even if the assistance of a suitable person as co-decision-maker were made available to him or her, to make one or more than one decision specified in the declaration relating to his or her personal welfare or property and affairs, or both”.
- If the Circuit Court affirms that the individual, “lacks capacity, even if the assistance of a suitable person as co-decision-maker were made available”, the Court may either make, “an order making the decision or decisions concerned on behalf of the relevant where it is satisfied that the matter is urgent or that it is otherwise expedient for it to do so”, or, “an order appointing a suitable person who has attained the age of 18 years to be a decision-making representative for the relevant person for the purposes of

making one or more than one decision specified in the order on behalf of the relevant person in relation to his or her personal welfare or property and affairs, or both”.

- The Assisted Decision-Making (Capacity) Act 2015 additionally states that, “when considering the suitability of a person to be a decision-making representative for a relevant person, the court shall have regard to the known will and preferences of the relevant person, the desirability of preserving existing relationships within the family of the relevant person, the relationship (if any) between the relevant person and the proposed representative, the compatibility of the proposed representative and the relevant person, whether the proposed representative will be able to perform the functions to be vested in him or her and any conflict of interests”, and that, “in making a decision-making representative order, the court shall, in so far as the order relates to the conferral of powers, ensure that the powers conferred are as limited in scope and duration as is necessary in the circumstances having regard to the interests of the relevant person the subject of the order”.
- The 2015 Act outlines the performance of functions of the decision-making representative, “in exercising his or her functions as specified in the decision-making representation order, a decision-making representative shall, insofar as this is possible, ascertain the will and preferences of the relevant person on a matter the subject of, or to be the subject of, a relevant decision and assist the relevant person with communicating such will and preferences”, “a decision-making

representative shall make a relevant decision on behalf of the relevant person and shall act as the agent of the relevant person in relation to a relevant decision”, and furthermore, “a decision-making representative for a relevant person shall not have authority to make decisions on behalf of a relevant person other than those specified in the decision-making representation order”.

The Assisted Decision-Making (Capacity) Act 2015 also has supplementary revised procedures relating to existing individuals who are Wards of Court, with provisions for enduring power of attorney and advance healthcare directives also included in the Assisted Decision-Making (Capacity) Act 2015 (Government, 2015):

- **Review of capacity for current Wards of Court**
 - Part 6 of the Assisted Decision-Making (Capacity) Act 2015 outlines guidance for the review of capacity of current adult Wards of Court.
 - An application for a declaration of review of capacity of a Ward can be made to the wardship court by, “(a) the ward, (b) a relative or friend of the ward who has had such personal contact with the ward over such period of time that a relationship of trusts exists between them or (c) such other person as appears to the wardship court to have a sufficient interest of expertise in the welfare of the ward”.
 - Where the wardship court makes a declaration pursuant to (a) the ward, the court, “shall immediately discharge the ward from wardship and shall order that the property of the former ward be returned to him or her and give such directions as it thinks appropriate having regard both to the discharge and the circumstances of the former ward”.

- Where the wardship court makes a declaration pursuant to (b) a relative or friend, the court can declare that, “the ward lacks capacity, unless the assistance of a suitable person as a co-decision-maker is made available to him or her, to make one or more than one decision”, the court “shall, on registration of a co-decision-making agreement, discharge the ward from wardship and shall order that the property of the former ward be returned to him or her and give such directions as it thinks appropriate having regard both to the discharge and the circumstances of the former ward”.
- Where the wardship court makes a declaration, “that the ward lacks capacity, even if the assistance of a suitable person as a co-decision-maker were made available to him or her”, the court shall, “make such orders as it considers appropriate under *Part 5*”, of the Assisted Decision-Making (Capacity) Act 2015 and, “order that the property of the former ward be returned to him or her upon the appointment of a decision-making representative in respect of the former ward”.
- The wardship court, after consultation with the Director, in respect of, “a ward or a class of wards”, “direct the Director to exercise his or her functions in relation to a ward or a class of wards, that the ward or class of wards lacked capacity, and the wardship court may, in order to give effect to its direction, give such other directions as it thinks appropriate having regard to the circumstances of the ward or the members of that class of wards”.

- **Enduring power of attorney**

- The Assisted Decision-Making (Capacity) Act 2015 incorporates processes in relation to enduring powers of attorney and outlines that, “a person who has attained the age of 18 years may appoint another person who has also attained that age on whom he or she confers either or both of the following”:
 - (1) general authority to act on the donor’s behalf in relation to all or a specified part of the donor’s property and affairs; or
 - (2) authority to do specified things on the donor’s behalf in relation to the donor’s personal welfare or property and affairs, or both.
- “An enduring power of attorney shall not enter into force until
 - (1) the donor lacks capacity in relation to one or more of the relevant decisions which are the subject of the power, and
 - (2) the instrument creating the enduring power of attorney has been registered”.
- “Where an enduring power of attorney is expressed to confer general authority in respect of all or a specified part of the donor’s property and affairs, it operates to confer, subject to any restrictions provided in the power, authority to do on behalf of the donor anything which the donor can lawfully do by attorney”.
- “A person is suitable for appointment as an attorney if he or she is able to perform the functions of attorney as specified in the enduring power of attorney”.
- An enduring power of attorney should include a statement outlining that, “the donor intends the power to be effective at any subsequent

time when he or she lacks capacity in relation to one or more relevant decisions which are the subject of the power”, and that, “the donor is aware that he or she may vary or revoke the power prior to its registration”.

- The document should also include a statement, “by a legal practitioner that, after interviewing the donor and making any necessary enquiries, he or she is satisfied that the donor understands the implications of creating the power, is satisfied that the donor is aware that he or she may vary or revoke the power prior to its registration and has no reason to believe that the instrument is being executed by the donor as a result of fraud, coercion or undue pressure”.
- A statement from a registered medical practitioner should also be included in the power, “that in his or her opinion at the time the power was executed, the donor has the capacity to understand the implications of creating the power”.
- The attorney should also include a statement, “that he or she understands the implications of undertaking to be an attorney for the donor and has read and understands the information contained in the instrument, understands and undertakes to act in accordance with his or her functions as specified in the instrument creating the enduring power of attorney, understands and undertakes to act in accordance with the guiding principles, understands and undertakes to comply with the reporting obligations and understands the requirements to registration of the power”.

- **Advance healthcare directives**

- The Assisted Decision-Making (Capacity) Act 2015 permits for the procedure for an individual to establish an advance healthcare directive, “ an advance healthcare directive (a) in relation to a person who has capacity, means an advance expression made by the person, of his or her will and preferences concerning treatment decisions that may arise in respect of him or her if he or she subsequently lacks capacity, and (b) in relation to a designated healthcare representative, means the advance expression referred to in paragraph (a) under which representative was designated as such representative”.
- The purpose of this section, “is to (a) enable persons to be treated according to their will and preferences, and (b) provide healthcare professionals with information about persons in relation to their treatment choices”.
- “A relevant person who has attained the age of 18 years and who has capacity is entitled to refuse treatment for any reason (including a reason based on his or her religious beliefs) notwithstanding that the refusal (a) appears to be an unwise decision, (b) appears not to be based on sound medical principles, or (c) may result in his or her death.

This essential revision and enhancement of the existing Irish capacity legislation as outlined by the Lunacy Regulation (Ireland) Act 1871 and the subsequent development of the Assisted Decision-Making (Capacity) Act 2015 (Government, 2015) is consistent with internationally based guidance and legislation in the area of mental capacity and in

particular, is congruent with the United Kingdoms' Mental Capacity Act 2005 (Government, 2005). The Assisted Decision-Making (Capacity) Act 2015 is analogous with the Mental Capacity Act 2005 in many essential considerations. The Mental Capacity Act 2005 is an Act that primarily advocates that an individual has an assumption of mental capacity unless there is an impairment in the mind or brain and thus the individual in question is subsequently unable to understand, retain, use or communicate the information needed to make the particular decision, that if necessary an individual should be assisted with their decision-making and consequently identifies the potential need for proxy decision-makers, an Act that acknowledges the individuals' right to make a decision that others may consider to be unwise, an Act that outlines that an individual's mental capacity is functional in time and ultimately an Act that endeavours to proportionately deliberate between the individuals capability and entitlement to make their own decisions, together with the fundamental principle and consideration of safeguarding vulnerable persons (Cave, 2014, Donnelly, 2009, Government, 2005, Doyal and Sheather, 2005, Hotopf, 2005, Danbury, 2016, Church and Watts, 2007, Raymont et al., 2004).

Comparable to the Assisted Decision-Making (Capacity) Act 2015, the Mental Capacity Act 2005 delineates that mental incapacity should only be established when all practicable steps to help the individual exercise their own decision-making capabilities have been taken without success and when mental incapacity is affirmed. Additionally, the UK 2005 Act does articulate for a 'best interest' position. Conversely and similarly to the Assisted Decision-Making (Capacity) Act 2015, the Mental Capacity Act 2005 advocates for the least restrictive option to be employed, for patient participation as much as is feasible and with consideration of the individual's past and present wishes, feelings,

values, beliefs and any other additional factors that the individual themselves would likely consider if they were able to do so in the overall decision-making process (Government, 2005, Government, 2015).

Overall, the forthcoming implementation and subsequent employment of the Assisted Decision-Making (Capacity) Act 2015 will demonstrate a substantial and significant advancement in Irish capacity legislation, placing the will and preferences of the person at the core of decision-making, necessitating that any interventions be the least obstructive to the individual and overall, “have due regard to the need to respect the rights of the relevant person to dignity, bodily integrity, privacy, autonomy and control over his or her financial affairs and property” (Kelly, 2015, Government, 2015). Furthermore, the eventual application and operation of the Assisted Decision-Making (Capacity) Act 2015 will also provide all physicians and allied healthcare staff with the imperative assistance required in Irish social and healthcare fields in relation to the assessment, evaluation and management of an individual’s capacity to consent to medical treatment.

1.2 Mental incapacity in hospital inpatients

The global philosophies and theories of mental capacity continually generate persistent debate in clinical and legal frameworks, in terms of the definition and classification of mental incapacity itself, the optimum method of capacity evaluation and assessment and correspondingly, the appropriate resolution when capacity is diminished or absent (Murphy et al., 2018, Moye and Marson, 2007, Raymont et al., 2004). Thus far, comprehensive research on the subject matter of capacity has concentrated on five

key issues – the nature of the capacity impairment within specific patient groups, the presence of cognitive prognosticators of decision-making capacity within these specific patient groups, the dependability of capacity assessments among clinicians and assessors, associations between opposing methods of capacity evaluation and assessment and finally, the longitudinal progression of capacity change and decline over time (Moye and Marson, 2007).

Evaluation of capacity has considerable clinical and management implications for treating physicians and associated healthcare professionals, with hospital based liaison psychiatric services frequently requested in relation to any uncertainty surrounding a hospital patient's capacity status (Sorrentino, 2014, Wong et al., 1999). One such study from King's College London outlined 35 such consultations requesting a second opinion psychiatric consultation in one year from the Department of Psychological Medicine. Of the total consultation requests received, 40% were sought due to a concern regarding a patient's capacity to consent to a therapeutic procedure (Ranjith and Hotopf, 2004). The results of this study further indicated that a total of 13 patients were deemed to lack mental capacity for decision-making when assessed for a second opinion by liaison psychiatry and that of those 13 individuals, 9 had a diagnosed organic mental disorder, most commonly dementia (Ranjith and Hotopf, 2004).

Reflecting on the prevalence of mental incapacity amongst hospital inpatients, there are numerous studies indicating an estimation of between one quarter and one half of all hospitalised patients lacking mental capacity for treatment decisions at any period of time (Bilanakis et al., 2014, Fitten and Waite, 1990, Lepping et al., 2015, Raymont et al., 2004, Sessums et al., 2011, Murphy et al., 2018). Nevertheless, explicit research articles and published results in relation to the prevalence of mental incapacity in the

medical and surgical population is limited, with the above small number of articles highlighted after an extensive literature review on the subject matter of capacity and consent in the hospital inpatient population group. Therefore, there is an obvious and discernible requirement for additional and comprehensive research into this vital area, with the topic of mental incapacity both meriting and requiring greater attention in clinical practice, research and legislation.

Raymont *et al.* performed a cross-sectional study and examined the prevalence of mental incapacity and any associated risk factors in 159 inpatients on a general medical ward by two methodologies, including clinical interview and by also assessing mental capacity using the Mac Arthur Competence Assessment Tool for Treatment (MacCAT-T) and the Mini Mental State Examination (MMSE) (Raymont et al., 2004, Raymont et al., 2007). Initially, 302 medical inpatients were approached to participate in the study but subsequently, 143 were not interviewed for inclusion in the research study and excluded for a number of documented explanations, including the unconscious state of a patient, the individual being unable to express a choice due to communication challenges or language barriers and also the presence of severe cognitive impairment. Results from the 159 medical patients who were included and interviewed in this research study indicated that 31% of all medical inpatients included were deemed not to have mental capacity for medical treatment decisions, that those individual's lacking mental capacity had appreciably lower outcomes on the MMSE and likewise, lower scores also on the understanding, appreciation and reasoning scales of the MacCAT-T. Supplementary analysis further indicated that 67% of individuals without decision-making capacity had more than one medical diagnosis, with infectious and neurological disorders more likely to be present in such individuals lacking mental capacity for medical treatment decisions.

Furthermore, increasing age, cognitive impairment, the absence of preadmission independent living and presence of a relative that acknowledged the patient was lacking in mental capacity for medical decision-making were independently associated with lack of mental capacity in an individual. Additional results specified that the presence of mental incapacity for medical treatment decisions was recognised by the patient's treating physician in only 24% of instances. The authors further postulated their belief that given their study results and conclusions, the matter of mental incapacity in this population group can be frequently unnoticed and consequently, additional measures should be implemented to safeguard this susceptible and vulnerable cohort of patients (Raymont et al., 2004).

Bilanakis *et al.* assessed the decision-making capacity for medical treatment decisions within 72 hours of hospital admission of 78 consecutive admissions over one month to an internal medicine ward of a general hospital in Greece, using two assessment tools, the Mini Mental State Examination (MMSE) and the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) (Bilanakis et al., 2014). Comparable to the study design outlined by Raymont and colleagues (Raymont et al., 2004), a total of 134 medical inpatients were initially approached to participate in the research study but following initial study interaction and preliminary assessment by the research examiners, 41.8% (n=56) of patients were subsequently excluded from further participation in the research study due to being deemed to have "evident incapacity" for medical decision-making owing to the presence of certain medical conditions including coma, disturbances of consciousness or severe cognitive impairment rendering the individual unable to articulate during an interview or conversation.

Therefore, although the research studies of Raymont and Bilanakis attempted to estimate the prevalence of mental incapacity in a medical inpatient population, their study designs inherently included criteria to exclude those individual's particularly at risk of mental incapacity for medical treatment decisions and ultimately the authors were therefore unable to present an entirely accurate and precise representation of the overall prevalence of mental incapacity in this inpatient population. Results from this Greek study signified that of the total number of medical patients approached during the initial stages of this study (n=134), 50.7% (n=68) of individuals were incompetent in making decisions related to their medical treatment while admitted to hospital and furthermore, that the presence of neurological disorders, an older age of participants and an altered cognitive status at the time of capacity assessment was negatively correlated with the individuals decision-making capacity for medical treatment decisions. With regards to the proficiency of the associated physicians to determine and conclude the presence or absence of mental incapacity for medical treatment decisions, the treating physicians indicated that 85.9% of the 78 consecutive medical admissions had mental capacity to decide on their medical treatment, indicating a significant underestimate of this evaluating physician group in relation to the occurrence of mental incapacity for treatment decisions in this cohort of medical inpatients.

An additional analysis by Sessmus *et al.* of all relevant MEDLINE and EMBASE articles addressing the assessment and evaluation of mental capacity of a patient to make medical treatment decisions, together with the assessment instruments utilised in this estimation of capacity, has yielded further results into this complex subject matter area of patient capacity and capability to consent to medical treatment (Sessums et al., 2011). This article included 43 research compositions, with a total participant number of 3684

and with outcomes assembled from 7 different countries. The research settings included medical inpatients wards, nursing home residents and healthy elderly controls and further encompassed a number of specific associated clinical conditions of the individual's, including mild cognitive impairment, Parkinson's disease, glioma, Alzheimer's disease and learning disability. The overall outcome of this study revealed that 19 different assessment instruments were used for patient capacity assessment, with the Mini Mental State Examination (MMSE) the most commonly employed.

The results of this study further specified that the prevalence of mental incapacity for medical treatment decisions was variable and contingent on the patient population as detailed above. Medical inpatients with accompanying lack of mental capacity for medical treatment decisions were observed in 26% of the cohort sampled, compared with 44% of nursing home residents and 2.8% of the healthy elderly controls. Additionally, the clinical diagnoses were further associated with a variable result with regards to mental capacity or incapacity for medical treatment decisions, with 20% of those individuals with mild cognitive impairment lacking mental capacity, 42% of patients with Parkinson's disease, 23% of individuals with glioma, 54% of patients with Alzheimer's disease and a further 68% of individuals with a diagnosis of learning disability. Furthermore, 8 of the 43 studies included in this research article reported the proportion of recognition of mental incapacity for medical treatment decisions by the patient's treating physician, with the primary physician appreciating the lack of mental capacity in the individual for medical treatment decisions in 42% of those studied. The authors further deliberated the potential measures that could be utilised to improve the reliability and dependability of physician capacity evaluations, including continued education and training in relation to the applicable legal criteria of mental capacity assessment,

employing standardised assessment tools if applicable and evaluating the core mental capacity focused cognitive domains of semantic knowledge and short-term recall (Sessums et al., 2011).

A systematic review on the frequency of deficient medical decision-making capacity in both medical and psychiatric scenarios was published by Lepping *et al.* in 2015 (Lepping et al., 2015). This electronic systematic review incorporated 23 research studies of specific medical inpatient settings and indicated an overall presence of mental incapacity for medical treatment decisions in 34% of medical patients studied, with an increased presence of mental incapacity for treatment decisions in individuals with learning disability and diagnoses of neurological origin or delirium. The authors theorised that although they only included research articles with the addition of validated measurement instruments utilised for capacity assessment, “it is not clear those tools could always answer questions around law and ethics” and therefore reflected upon the multifaceted and complex clinical and legal subject of patient decision-making capacity to consent to treatment. Of note, the research articles included from specific psychiatric inpatient settings suggested that there was no difference in terms of the proportion of mental incapacity for treatment decisions in either setting, medical or psychiatric (Lepping et al., 2015).

Kolva and colleagues evaluated mental capacity in hospital inpatients admitted to terminal and end of life patient care using the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) and determined that impairment in decision-making capacity in at least one domain of the MacCAT-T was found in one third of the sample and specifically in the understanding (44.2%), appreciation (49.0%) and reasoning (85.4%) subscales of the MacCAT-T in this patient cohort (Kolva et al., 2018, Kolva et al., 2014).

These results further revealed that the largest proportion of deficiency was seen on the subscales of the MacCAT-T that depend principally on the patient's verbal skills and capabilities. This same cohort of terminally ill and end of life patients were also assessed by their treating physician in terms of their mental capacity and ability to consent to treatment (Kolva et al., 2018). Results from this evaluation indicated that 64.1% of patients were regarded to have mental capacity for treatment decisions, 33.9% were deemed to be moderately impaired with regards to mental capacity for treatment decisions and the remaining 1.8% was deemed to be severely impaired with regards to mental capacity for treatment decisions. With this published elevated level of impaired capacity and decision-making ability in this specific cohort of patients, the authors address the importance of advance healthcare planning and the additional treatment options that should be available to such patients, including the availability and opportunity to prepare and invoke a power of attorney.

Conversely, sufficient comprehension with regards to the nuances of patient capacity assessment and the ability of a patient to consent by the specific treating physician and the medical profession in general is exceedingly variable. A study evaluating the knowledge and awareness of matters relating to patient capacity and consent, incorporating the medical specialties most likely to be involved in the assessment of capacity for decision-making (Psychiatry, Geriatrics, General Practice), together with medical students, observed that, with regards to capacity to consent to refuse medical treatment, correct answers of a structured questionnaire were provided by only 58% of Psychiatrists, 34% of Geriatricians, 20% of General Practitioners and 15% of medical students (Jackson and Warner, 2002). This study also addressed the issue of capacity to consent to research, with correct answers received from 33% of Consultants,

37% of Specialist Registrars, 13% of NCHDs (non-consultant hospital doctors) and 11% of General Practitioners. Awareness of matters relating to testamentary capacity was also deemed inadequate, with correct answer provided by 20% of Consultants, 16% of Specialist Registrars, 20% of NCHDs and 3% of General Practitioners. This research article primarily highlights the inadequate knowledge base of this complex area of patient care in a UK sample of medical professionals, is therefore likely to be very generalisable to both the Irish medical population and the wider international medical population at large and further conveys the need for continued medical education and training for all healthcare staff and also for all associated healthcare organisations.

Hermann *et al.* exclusively assessed the knowledge, attitudes and assessment practices of 763 physicians in Switzerland on the topic and concept of medical decision-making capacity within a representative cross-sectional sample and survey design (Hermann *et al.*, 2014). Outcomes indicated that decision-making capacity was most frequently judged implicitly (63.5%), with explicit assessments chiefly completed using unstructured interviews (36.5%). This article also integrated the accompanying diverging physician opinions on whether decision-making capacity is either a gradual (73.9%) or dichotomous (22.4%) concept. Physicians in this survey considered cognitive facilities to be the most important when determining decision-making capacity for medical treatment decisions, followed by emotional, intuitive and evaluative aspects of the physician-patient interaction, including the psychopathological status of the individual, the medical, social and somatic context of the presentation, the intricacy of the treatment alternatives, information and statements from the patient's relatives and next of kin, the therapeutic relationship between the patient and physician and finally the physician's personal set of values.

This physician survey further disclosed that physicians tended to examine the specific issue of medical treatment decision-making capacity in particular patient groups, including healthy elderly patients (44.9% of physicians surveyed), patients at the end of life (44.4% of physicians surveyed), patients with mild cognitive impairment (44% of physicians surveyed), patients with Alzheimer's disease (40.2% of physicians surveyed), general medical inpatients (34.7% of physicians surveyed), patients with Parkinson's disease (24.6% of physicians surveyed), patients with glioma (16.7% of physicians surveyed) and individuals with a learning disability (21.8% of physicians surveyed). Moreover, 35.8% of those surveyed indicated that they felt very responsible for evaluating medical treatment decision-making capacity for their patients, with 73.7% indicating that the consequence of a medical decision was rather or very relevant for how they assessed decision-making capacity. A majority of physicians listed the primary mode of assessment of decision-making capacity as per the Mini Mental State Examination (MMSE), 72.3% of physicians had never heard of specific instruments for capacity evaluation, including the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) and in conclusion, 65.8% of physicians emphasized the need for standardisation and continuation of assessment and training in this area of patient capacity and ability to consent and also for the accessibility of official guidelines in the systematic evaluation of decision-making capacity within their patient populations.

A study by Fitten and Waite in 1990 evaluated the effects of acute medical hospitalisation on decision-making capacity in an elderly population, aged 60 years or older, without neurological or psychiatric comorbidities and additionally, the associated clinical capacity assessment performed by the treating physician (Fitten and Waite, 1990). This study examined cognitive status using the Mini Mental State Examination

(MMSE) and further evaluated the individual's overall decision-making capacity through three hypothetical clinical vignettes of escalating difficulty. Results indicated a statistically significant distinction between the patient and control groups in the theme of understanding, with 28% of patients studied exhibiting impaired decision-making capacity for medical treatment in at least one clinical vignette. Moreover, examination of the physician outcomes disclosed that approximately half of included physicians did not specifically evaluate the patient's decision-making capacity upon medical admission to hospital, nor consider the issue of informed consent, review patient preferences for medical treatment, and/or discuss alternative treatment options with patients, with physicians indicating their opinion of the presence of adequate decision-making capabilities in almost 90% of individuals included in the study (Fitten and Waite, 1990).

This review of published literature as detailed above does highlight the significant and substantial number of medical inpatients deficient in capacity for medical treatment decisions at any given timepoint, the complex comorbidities of these medically admitted individuals, the lack of consensus among treating physicians regarding the optimum assessment tools for decision-making capacity evaluation and furthermore, the considerable need for all clinicians and allied healthcare staff to be knowledgeable and conversant of the likelihood and probability of mental incapacity among this cohort of vulnerable inpatients.

1.3 Capacity assessment in theory and practice

Evaluation of an individual's capacity status is an essential characteristic of many physician-patient consultations (Appelbaum, 2007, Edelstein, 2000), with most capacity

assessments performed and determined implicitly during the clinical conversation and interaction, owing to a customary presumption of an individual's mental capacity. Conversely, training and education for physicians and associated healthcare staff in relation to a comprehensive awareness and familiarity of all aspects of a patient's mental capacity and subsequently, the ability to evaluate this capacity is often deemed inadequate (Ganzini et al., 2003). Additionally, when questioned, many healthcare professionals have expressed an inadequate appreciation and understanding of the key theories and concepts required for assessment of a hospital based patient's medical decision-making capacity (Ganzini et al., 2003). These errors include a deficient knowledge base in relation to the functional aspects of mental capacity, explicit awareness that capacity is decision, time and situation specific, an over-reliance on the cognitive status of the individual in determining the mental capacity status of that individual, additionally mistaking clinical capacity with legal competence and ultimately an insufficient awareness of the practical steps necessary to complete a capacity assessment (Ganzini et al., 2003).

Prior to any formal and explicit mental capacity examination, a thorough clinical history and examination of the individual in question by the treating physician should occur. This should be the initial step of physician-patient communication and ultimately begin the process of mental capacity evaluation. This physician-patient interaction is a fundamental component of mental capacity assessment and establishes the relationship between the doctor and the individual with regards to mutual collaboration, trust, knowledge and expectation, while also providing the patient with clinical acknowledgement, compassion, care and information (Hermann et al., 2017, Meynen, 2011, Supady et al., 2011). The assessor ought firstly to ensure that the patient in

question has been provided with all necessary information that is relevant to the informed medical decision-making process, including the nature of the illness and proposed treatments, the risks, benefits and consequences of the recommended treatment, any alternative treatment choices and likewise, the option of no treatment (Appelbaum, 2007, Gunn et al., 1999, Jones and Holden, 2004, Kolva et al., 2014, Lai and Karlawish, 2007, Lo, 1990, Moye et al., 2006, Moye and Marson, 2007, Palmer and Harmell, 2016). Over the last number of decades there has been an observable shift in physician capacity assessment practices, from a predominantly diagnostic focus, to a more functional one and also, on the key operative abilities relevant for medical treatment decision-making, with capacity in relation to healthcare decisions typically defined in terms of four criteria, understanding, appreciation, reasoning and expressing a choice (Moye and Marson, 2007, Palmer and Harmell, 2016, Grisso and Appelbaum, 1998, Racine and Billick, 2012, Vellinga et al., 2004). When formal and explicit capacity assessment is required for medical treatment decisions, a number of distinctive assessment tools are available for use, as thus far, there is no universally established and acknowledged standardized tool for capacity assessment for medical treatment decisions (Jones and Holden, 2004, Miller and Marin, 2000, Moye et al., 2006, Moye and Marson, 2007, Racine and Billick, 2012).

Paul Appelbaum and colleagues have been investigating the issue of mental capacity and incapacity for medical treatment decisions in hospital-based patients for a number of decades (Appelbaum, 1992, Grisso and Appelbaum, 1993, Grisso and Appelbaum, 1992). In 1997, 82 hospitalized cardiology inpatients and healthy control subjects were selected and decision-making capacity between the two groups was assessed (Appelbaum and Grisso, 1997). Applying three assessment tools, ‘Understanding Treatment Disclosures’ (Grisso and Appelbaum, 1992), ‘Perceptions of

Disorder’ (Appelbaum, 1992) and ‘Thinking Rationally About Treatment’ (Grisso and Appelbaum, 1993), four categories of competences for decision-making were observed and classified, namely, the ability of the individual to understand the relevant information, the ability of the individual to appreciate the essentials of the situation, the ability of the individual to manipulate material rationally and the ability of the individual to communicate a choice (Appelbaum and Grisso, 1997). Results additionally indicated that approximately 10% of all hospitalised patients had outcomes that implied a significant difficulty in recognising and accepting the nature and severity of their physical health condition and also that the medical patient’s ability to understand the relevant information was significantly correlated with the age at first hospital admission, the individuals race and verbal cognitive functioning ability. Appreciation of the essentials of the situation was significantly correlated with socioeconomic status of the individual. This study, combined with previous and future exploration by the authors, became the origin of one of the most extensively employed capacity assessment tools, The MacArthur Competence Assessment Tool for Treatment (MacCAT-T) (Grisso and Appelbaum, 1998, Appelbaum and Grisso, 1995).

This assessment tool is currently judged to be the most widely accepted tool for mental capacity assessment and determination, it aims to operate with objectivity and reliability during capacity evaluations, has excellent validity and interrater reliability, is especially appropriate for use in clinical scenarios and ultimately examines a number of the core fundamental capabilities to determine competence of a patient in the medical decision-making process, specifically their understanding of the disorder and treatment, appreciation, reasoning and ability to express a choice (Berghmans et al., 2004, Breden and Vollmann, 2004, Grisso et al., 1997, Grisso and Appelbaum, 1995, Karel et al., 2010,

Moye et al., 2006, Palmer and Harmell, 2016, Racine and Billick, 2012, Raymont, 2002, Sturman, 2005, Elzakkars et al., 2018). It is for these substantial reasons that, for this research study, assessment of decision-making capacity in this cohort of medical and surgical inpatients was determined using The MacArthur Competence Assessment Tool for Treatment (MacCAT-T) as one of our two methods of patient capacity evaluation.

Developed in the United States, this assessment tool and the incorporated and accompanying fundamental decision-making capabilities were generated in line with formerly designated legal standards of capacity judgement, namely the ability to understand relevant information regarding a concrete decision of treatment, the ability to manipulate this relevant information rationally so as to make comparisons and weigh options, the ability to appreciate the significance of the given information about the illness and possible treatment(s) for one's own situation and finally to express a choice (Grisso and Appelbaum, 1995, Grisso et al., 1997).

The MacCAT-T is intended for use exclusively in combination with clinical and/or psychiatric assessment and therefore, conclusive results indicate a continuous and non-binary outcome of patient decision-making capacity and thus, without an overall cut-off score indicating patient competence or incompetence. The MacCAT-T measures these essential elements of mental capacity on continuous scales with a high degree of inter-rater reliability, ranging between 0.99 for 'understanding' and 0.87 for 'appreciation' (Grisso et al., 1997). This assessment tool is performed by a semi-structured interview by a trained interviewer, with examination typically over 20 to 30 minutes and yielding outcomes on the four scales as detailed above, with higher scores indicating greater mental capacity of the individual:

(1) Understanding:

Understanding of the disorder and its treatment includes both the associated benefits and risks. This scale is rated from 0 to 6, comprising three sub-scales and with each sub-scale rated from 0 to 2:

- Understanding Disorder
- Understanding Treatment
- Understanding Benefits/Risks

When scoring all three sub-scales for ‘Understanding’, a rating of 2 indicates that the patient has ‘a fairly clear or reasonably accurate understanding’, a rating of 1 indicates that the patient ‘shows some recollection but in a way that renders understanding uncertain, with responses that are too broad or vague to be sure’ and a rating of 0 indicates that the patient ‘does not recall the content, is clearly inaccurate or describes understanding in a way that seriously distorts its meaning’.

(2) Appreciation:

Appreciation of the disorder and its treatments pursues information about how the patient understands in what way they could be specifically affected by their illness, which would usually require a level of insight. This scale is rated from 0 to 4, comprising two sub-scales, each of which is rated from 0 to 2:

- Appreciation of the Disorder
- Appreciation of the Treatment

With regards to scoring for appreciation of the disorder, a rating of 2 signifies that the ‘patient acknowledges that he or she manifests the disclosed disorder and all or most of the disclosed symptoms’ or that the patient does not agree with the

disclosed disorder and associated symptoms ‘but offers reasons that are not delusional and have some reasonable explanation’. A rating of 1 signifies that the ‘patient acknowledges manifesting the disorder and some of the disclosed symptoms but does not acknowledge other symptoms that are critical to understanding the disorder and/or its treatment’ or that the ‘patient disagrees or is ambivalent about the existence of the disorder or the symptoms, but for reasons that are vague or not clearly expressed’. A rating outcome of 0 signifies that the ‘patient clearly does not agree that he or she has the disclosed disorder, with reasoning based on a delusional premise or some other belief that seriously distorts reality and does not have a reasonable basis in the patient’s cultural or religious background’, or that the ‘patient believes that the symptoms are related to circumstance other than a medical/psychiatric disorder’, or that the ‘patient clearly disagrees with the symptoms or disorder, but with no comprehensible explanation offered’.

With regards to scoring of appreciation of the treatment, a rating of 2 signifies that the ‘patient acknowledges at least some potential for the treatment to produce some benefit, and the reasoning given is not based on a delusional premise or a serious distortion of reality’, or that the ‘patient does not believe that the treatment has the potential to produce some benefit, but offers reasons that are not delusional and have some reasonable explanation’. A rating of 1 signifies that the ‘patient does or does not believe that the treatment has the potential to produce some benefit but the reason is vague or does not allow the examiner to determine whether the reason represents delusional thinking or serious distortion of reality’, or that the ‘patient is ambivalent concerning whether the treatment has potential to

produce some benefit' A rating of 0 signifies that the 'patient acknowledges at least some potential for the treatment to produce some benefit, but for reasons that appear to be based on a delusional premise or a serious distortion of reality', or that the 'patient does not believe that the treatment has the potential to produces any benefit, and offers reasons that appear to be delusional or a serious distortion of reality'.

(3) Reasoning:

Reasoning assesses the progression during the decision-making process and the patient's ability to compare alternative treatment options in view of their consequences. This scale is rated from 0 to 8, comprising of four sub-scales, with each rated 0 to 2:

- Consequential reasoning
- Comparative reasoning
- Generating consequences
- Logical consistency

With regards to the scoring of consequential reasoning, a rating of 2 indicates that the 'patient mentions at least two specific consequences when explaining the choice, the consequences may be related to only one or to more than one treatment option'. A rating of 1 indicates that the 'patient mentions only one specific consequence when explaining the choice' and a rating of 0 indicates that the 'patient mentions no specific consequences when explaining the choice, even after being asked whether there are any "more specific reasons why that choice seems best"'.

With regards to the scoring of comparative reasoning, a rating of 2 signifies that the ‘patient offers at least one statement in the form of a comparison of at least two options, with the comparison including a statement of at least one specific difference’. A rating of 1 signifies that the ‘patient makes comparison statement but does not include a statement of a specific consequence’ and a rating of 0 signifies that the ‘patient makes no comparative statements’.

With regards to the scoring of generating consequences, a rating of 2 indicates that the ‘patient gives at least two reasonable everyday consequences, including at least one for each of the two inquiry questions’, a rating of 1 indicates that the ‘patient gives at least one or more reasonable everyday consequences for one of the inquiry questions, but none for the other’ and a rating of 0 indicates that the ‘patient gives no reasonable everyday consequences, even with adequate encouragement’.

With regards to the scoring of logical consistency, a rating of 2 signifies that the ‘patient’s final choice follows logically from the patient’s own reasoning, as put forth by the patient’s responses when explaining the choice’. A rating of 1 signifies that ‘it is not clear whether the final choice follows logically from the patient’s reasoning when explaining the choice’ and a rating of 0 signifies that the ‘patient’s final choice clearly does not follow logically from the patient’s previous reasoning.

(4) Expressing a choice:

The ability to express a choice is rated from 0 to 2. When scoring this section, a rating of 2 indicates that the ‘patient states a choice or indicates desire for

professional or other responsible person to make the choice’, a rating of 1 indicates that the ‘patient states two or three choices, seems ambivalent’ and a rating of 0 indicates that the ‘patient states no choice’.

Although the MacCAT-T is considered to be the present-day most widely used and accepted tool in terms of capacity assessment, additional instruments are available for the evaluation of patient decision-making capacity. The Mini Mental State Examination (MMSE) is a potential alternative option when considering utilising a tool to assess decision-making capacity and has been employed for same in a number of published research studies (Fitten and Waite, 1990, Holzer et al., 1997, Fassassi et al., 2009, Etchells et al., 1999, Etchells et al., 1997, Kim and Caine, 2002, Elzakkars et al., 2018). The MMSE is an assessment tool that was originally designed and is more frequently used for the detection of cognitive impairment in an individual (Tombaugh and McIntyre, 1992, Folstein et al., 1983). Assessment using the MMSE is typically completed in 5 to 10 minutes, is scored out of a maximum of 30 points and is a tool comprising of seven categories, each judiciously representative of a distinctive cognitive domain - orientation to time (5 points), orientation to place (5 points), registration of three words (3 points), attention and calculation (5 points), recall of the three words (3 points), language (8 points) and visual construction (1 point) (Folstein et al., 1983).

The MMSE gives further guidance in relation to overall scores obtained by an individual, with a score greater than 25 decreasing the odds of dementia, a score lower than 24 deemed abnormal, with a score of less than 21 indicating an increasing likelihood of dementia (Folstein et al., 1983, Tombaugh and McIntyre, 1992). Supplementary material provided on page three of the instrument tool also indicates that a score between 24 and 30 designates no cognitive impairment, a score between 18 and 23 designates mild

cognitive impairment and a score below 17 designating severe cognitive impairment (Folstein et al., 1983, Tombaugh and McIntyre, 1992). However, in the present-day, clinicians often further subclassify the presence of cognitive impairment into mild (20 to 24 points), moderate (13 to 19 points) and severe (lower than 12 points) (Association, 2019).

In published research reports, evaluation of an individual's capacity employing the MMSE has presented diverse results (Etchells et al., 1999, Etchells et al., 1997, Kim and Caine, 2002). Etchells and colleagues evaluated the capacity of a medical patient to consent to major medical treatment and utilised both the MMSE and clinical interview in concluding patient capacity or incapacity in the overall decision-making process (Etchells et al., 1997). The results displayed that if the treating physician's clinical interview deemed that the medical patient was "definitely capable", a subsequent psychiatric evaluation was very likely to concur with this opinion. However, additional clinical opinions from the patient's treating physician of "probably capable" through to "definitely capable" were largely inaccurate. Consequently, the results indicated that the MMSE scores of individuals were not accurate in the assessment of capacity to consent to major medical treatment, with one explicit clinical scenario where an individual scored a maximum 30 points in the MMSE but was later found to lack mental capacity to consent to major medical treatment following a psychiatric assessment. The results also revealed that many of the individuals scoring between 16 and 23 on the MMSE and therefore presumed to lack mental capacity purely by the associated classification of moderate cognitive impairment, were most often inaccurately categorised as having mental incapacity. The authors hypothesised that one possibility for such specific clinical situations and the associated overall results of patient capacity assessments utilising the

MMSE was that the MMSE tool solitarily gauges the cognitive functioning of an individual and that although similar, cognition and capacity are not exclusively interconnected constructs (Etchells et al., 1997). The authors further conjectured that the MMSE tool is limited in the capability to evaluate an individual's inclusive decision-making abilities, thus further restricting the use of the MMSE as a singular tool for appraisal of capacity to consent to treatment (Etchells et al., 1999, Etchells et al., 1997).

Fassassi *et al.* exposed a specificity of 57.1% and a sensitivity of 88.8% when applying the MMSE to decision-making capacity to consent to medical treatment in an acute general medical ward and further revealed that in specific patient cases and associated circumstances, the MMSE score was highly unreliable. This study revealed a comparable clinical scenario where one patient was assessed with the MMSE and subsequently scored 29 points out of the maximum of 30 points but was consequently deemed to lack capacity to consent to medical treatment following additional psychiatric evaluation (Fassassi et al., 2009). This study further concluded that the MMSE was not exceptionally precise in determining capacity to consent to medical treatment and that other available assessment tools should be evaluated for use in the evaluation of patient capacity to consent to treatment (Fassassi et al., 2009).

A study in 1990 evaluated the influence of acute medical hospitalisation on the decision-making capacity of an elderly population, aged 60 years or older and without neurological or psychiatric comorbidities (Fitten and Waite, 1990). This study examined cognitive status of the individuals using the Mini Mental State Examination (MMSE) and further assessed the individual's overall decision-making capacity through the use of three hypothetical clinical vignettes of escalating difficulty and a subsequent clinical interview by the individual's treating physician. Results revealed a statistically significant

distinction between the patient and control groups in the theme of understanding, with 28% of medical patients studied exhibiting impaired decision-making capacity for medical treatment in at least one clinical vignette, which was also correspondingly not detected by MMSE or the treating physician. Additional results indicated that of the total number of medical patients assessed and included in the study, 8% were compromised in all three clinical vignette scenarios. When comparison was made between a patients decision-making capacity using the clinical vignettes criteria and the physician assessment outcomes, significant divergences were discovered in 28% of instances (Fitten and Waite, 1990).

A further study by Holzer *et al.* evaluated the association between cognitive functions and the decision-making capacity of an individual to give informed consent (Holzer et al., 1997). Researchers appraised cognitive status via a number of neuropsychological measures including The Mini Mental State Examination, The Hopkins Competency Assessment Test, The Trail-Making Test and The Executive Interview and indicated that significant distinctions were found between the competent and noncompetent groups on all of the cognitive measures and also on The Hopkins Competency Assessment Test, further representative of greater cognitive impairment in the noncompetent group of patients.

In summary, a number of studies have assessed and evaluated patient capacity to consent to major medical treatment employing both the MMSE and psychiatric and/or clinical interview and additionally, reported that overall MMSE scores were not largely accurate or precise in determining decision-making capacity when compared to clinical and psychiatric interview and that ultimately, no total cut-off score of the MMSE produced adequately high sensitivity or specificity rates for the recommendation of

routine use of the MMSE in patient capacity assessments (Etchells et al., 1997, Etchells et al., 1999, Kim and Caine, 2002, Fassassi et al., 2009).

Capacity to Consent to Treatment Instrument (CCTI) (Moye et al., 2007) is a conceptually based and motor free assessment tool, which was initially designed as a research instrument in the assessment and evaluation of capacity to consent to treatment utilizing a hypothetical clinical vignette design. Individuals under assessment are presented with clinical vignette information in both oral and written formats and followed by a question and answer format. This structure of the appraisal is intended to assess capacity to consent to treatment under the four core consent standards originating from both medical and legal influences, including the understanding of the treatment situation and treatment choices together with the associated risks and benefits, appreciating the personal consequences of a treatment choice, providing rational reasons for a treatment choice and finally expressing a treatment choice. (Martin et al., 2008, Moye et al., 2007). CCTI has a moderate interrater reliability of 0.83 and internal consistency of 0.96, with outcomes indicating agreement with the CCTI and the primary care clinician assessment of medical decision-making capacity of 82% and agreement with the CCTI and expert clinician assessment of medical decision-making capacity of 75% (Moye et al., 2007).

Additional research articles employing assessment of decision-making capacity using the CCTI in a patient cohort of associated cognitive impairment was authored by Okonkwo and colleagues (Okonkwo et al., 2007, Okonkwo et al., 2008). Individuals with mild cognitive impairment and mild Alzheimer's dementia were assessed using the Capacity to Consent to Treatment Instrument (CCTI) together with a number of neuropsychological measurements also. Patients with mild cognitive impairment scored significantly lower compared to controls on the areas of appreciation, reasoning and

understanding, with associated significant decline in understanding observed over time and likely related to a conversion in participants from mild cognitive impairment to mild Alzheimer's dementia in these individuals. Additionally, patients with mild cognitive impairment scored higher than patients with Alzheimer's dementia on the topics of expressing a choice, reasoning and understanding. The authors further discussed a pattern noted within the individuals with both mild cognitive impairment and mild Alzheimer's dementia, referred to as capacity compromise in the article and further defined as the combination of marginally capable and incapable outcomes appreciated on the overall capacity assessment.

The Capacity to Consent to Treatment Instrument (CCTI) was again employed in a research article for the evaluation of higher order functional skills and associated decision-making capacity for medical treatment decisions in individuals with Parkinson's disease (Martin et al., 2008). The participants were grouped into two, those with Parkinson's disease and cognitive impairment without dementia and those with Parkinson's disease dementia, together with a healthy control group. Results from this study indicated that in comparison to the control group, those individuals with Parkinson's disease and cognitive impairment without dementia portrayed substantial deficiency in the area of understanding treatment consent standards and relative to the other two groups, those individuals with Parkinson's disease dementia were significantly deficient in the three clinical rating standards of understanding, reasoning and appreciation.

Dymek and colleagues further utilised the Capacity to Consent to Treatment Instrument (CCTI) when assessing capacity to consent to medical treatment in individuals with Parkinson's disease and associated cognitive impairment and in comparison with

healthy controls and results again indicated that individuals with Parkinson's disease with cognitive impairment achieved lower scores on all four areas of the CCTI, capacity to express a treatment choice, to appreciate the associated consequences of the treatment choice, to provide rational arguments for their treatment choice(s) and finally to understand the treatment choice(s) and accompanying treatment circumstances (Dymek et al., 2001).

In 1998, Kitamura and colleagues developed a 12-item structured interview grounded on a number of core domains of competency, the Structured Interview for Competency/Incompetency Assessment Testing and Ranking Inventory (SICIATRI), with an associated 0.83 sensitivity and a 0.67 specificity (Kitamura et al., 1998). These core items for competency include patient awareness that he or she was informed of the relevant information, that he or she understands that they have the right to decide, evidence of his or her own choice in the decision, that the patient does not waive the right to decide, that the patient understands the expected benefits, risk and alternative treatments, that the patient understands the benefits and risks of no treatment, that the patient expresses a wish to get better, without the presence of pathological determinants and is displaying insight throughout the interview. When the authors utilized the SICIATRI for assessment of competency among medical inpatients for medical treatment decisions, 95.7% successfully articulated the expected benefits from treatment, 34.8% the expected risks, 47.8% discussed the alternative treatments available, 4.3% communicated the expected benefits from no treatment and 78.3% deliberated the expected risks from no treatment.

Aid to Capacity Evaluation (ACE) is an assessment tool performed by a semi-structured interview that evaluates seven components of the specific medical issue under

discussion (Etchells et al., 1999). The examiner attempts to judge the individual's ability to understand the medical issue, the treatment proposed, the alternative treatment options, the option of refusing treatment and the abilities of the patient to perceive consequences of accepting or refusing treatment and all in the absence of hallucinations, delusions or depression (Racine and Billick, 2012). Etchells et al. documented a 93% agreement for clinician/nurse capacity assessment using ACE and expert competency assessment using ACE (Etchells et al., 1999).

As detailed above, although there are several potential and acceptable alternative assessment options for the evaluation of a patient's medical decision-making abilities and their capacity to consent to medical treatment, upon contemplation it was determined that the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) would be the optimal capacity assessment tool for use in this research study, as it provides exceptional validity and interrater reliability, was specifically designed for use in clinical locations, imparts results in a continuous and non-binary outcome and conclusively incorporates the core fundamental capabilities necessary to determine capacity of a patient in the medical treatment decision-making process (Grisso and Appelbaum, 1998, Elzakkars et al., 2018).

1.4 Study aims and objectives

As stated above, the Assisted Decision-Making (Capacity) Act 2015 was signed into Irish Law by President Michael D. Higgins, Republic of Ireland President on December 30th 2015 and is optimistically due for commencement shortly by the Irish

Government. The inauguration and implementation of this Act is expected to be exceptionally challenging for all service users, healthcare professionals, family members, healthcare organisations and court services, as this revised capacity legislation will encompass all individuals lacking or potentially lacking in mental capacity for decision-making, including hospital inpatients, nursing home residents and those individuals residing in the community and therefore under the care of General Practitioners. Prior to this research project, the author is unaware of any previous research studies in Ireland assessing and/or evaluating the prevalence of mental capacity and incapacity in hospital-based inpatients. Therefore, in preparation and provision prior to the formal application of the Assisted Decision-Making (Capacity) Act 2015 to the Republic of Ireland, healthcare providers and statutory agencies have been and are currently utilising internationally based figures for mental incapacity among hospital patients, estimated to be approximately one quarter to one half of all hospital inpatients, (Bilanakis et al., 2014, Owen et al., 2013, Raymont et al., 2004).

This research study was therefore purposefully designed to be the first study in Ireland to assess the prevalence of mental incapacity in this inpatient population by randomly selecting 300 medical and surgical hospital inpatients in both an urban and rural setting, Tallaght Hospital, Dublin and Midland Regional Hospital, Portlaoise and moreover, to elucidate nationally based statistics to further complement the existing international database in relation to the prevalence of mental incapacity amongst medical and surgical hospital inpatients. An additional aim of this research project was to also inform all national stakeholders in Ireland of the potential statistics in relation to the prevalence of mental incapacity in hospital inpatients during this imperative stage of

resource planning and preparation prior to the formal implementation of the Assisted Decision-Making (Capacity) Act 2015.

Examining the Irish hospital inpatient population specifically, in 2016 there were 1,704,452 discharges by acute public hospitals, a reported increase of 10% over the preceding 5 years and a 2.4% increase in the year 2015 – 2016 (Office, 2017). Furthermore, the 65 years and over age group represented the greatest proportion of total discharges from acute hospitals that year of 36.2%, correspondingly demonstrating an increase of 20.2% for this patient group of the total discharged population, as compared to the previous 5-year figures. This age group also accounted for 31.8% of inpatient discharges and 53.3% of inpatient bed days in the year 2016 (Office, 2017). As illustrated above in the particular details revealed from the comprehensive literature review on the subject of hospital inpatient capacity and incapacity to consent to treatment, older aged individuals and the associated increasing medical and surgical comorbidity of this cohort of patients has been independently connected with deficient decision-making capacity for medical treatment decisions.

To date, the author is unaware of any comparable research studies in the Republic of Ireland detailing the prevalence of mental incapacity in either nursing home residents or in the Irish community population currently under the principal medical care of General Practitioners. A study by Fitten and colleagues evaluated the treatment decision-making capacity of a nursing home resident population utilising the Mini Mental State Examination (MMSE) and clinical examination (Fitten et al., 1990). The outcomes of this research study revealed that 66.6% of individuals assessed did not have intact decision-making capacity and of this total number, 29.4% were deemed to have intermediate decision-making abilities and a further 37.3% were deemed to have very impaired

decision-making abilities. Conversely, physician assessment of this same cohort of nursing home residents revealed that healthcare professionals articulated intact mental capacity for treatment decisions in 77% of those individuals interviewed (Fitten et al., 1990). Accordingly, there will very likely be distinctive complexities for the operative resources of the Irish healthcare service, accompanying administrative offices, General Practitioners and the community healthcare workforce and similarly the Irish court services when the Assisted Decision-Making (Capacity) Act 2015 is ultimately implemented. It is for all of the above reasons that this research study evaluating the prevalence of mental incapacity in the Irish hospital urban and rural medical and surgical inpatient population was designed, approved, evaluated and completed and all accomplished in the time interval preceding the enactment of the Assisted Decision-Making (Capacity) Act 2015.

Chapter 2: Methods

2.1 Recruitment process

As outlined above in the introduction chapter, the aim and objectives of this research study was to assess and evaluate the prevalence of mental incapacity for medical treatment decisions in both an urban and rural medical and surgical hospital inpatient population in the Republic of Ireland. This research project became evermore necessary due to the sustained labour and endeavours to update Ireland's current mental capacity legislation by the National Implementation Group for the Assisted Decision-Making (Capacity) Act 2015 over the last number of years, with the culmination of this work illustrated when the President of Ireland signed this Act into Irish Law in 2015.

Detailed and comprehensive planning and preparation for the commencement of this research study began in September 2016. The study design employed for this research project was a cross-sectional, observational study design. The subsequent recruitment for this study was located in two general hospitals in the Republic of Ireland. The first location was in Tallaght University Hospital in Dublin, Co. Dublin and the second location was in Midland Regional Hospital in Portlaoise, Co. Laois. Both of these hospital locations were intentionally chosen for study location and recruitment as both of these general hospitals offered a variety of advantages and benefits to this research proposal and design and furthermore, both hospitals had an enthusiastic and energetic multidisciplinary healthcare workforce that valued and participated in healthcare research projects.

Tallaght University Hospital is one of Ireland's largest acute teaching hospitals, is based in Dublin, the capital city of Ireland and has both an urban and suburban catchment area of west and south-west Dublin County. With 620 beds, 12 theatres and 14 critical care beds in operation, the hospital treats over 410,000 patients per year and employs almost 3,000 healthcare and allied staff members. The hospital provides access for patients to over 20 medical and surgical specialties and is equipped with a comprehensive on-site laboratory and radiological support services. It is also a national urology centre, the second largest provider of dialysis services in Ireland and a regional orthopaedic trauma centre. Tallaght University Hospital is also one of two main teaching hospitals of Trinity College Dublin. Midland Regional Hospital, Portlaoise, County Laois, is a 200-bed acute hospital serving the local predominantly rural eastern catchment areas of Counties Laois, Offaly, Kildare, Carlow and Tipperary. This hospital was established in 1936 and is part of the Dublin Midlands Hospital Group, a network of hospital groups in the eastern part of Ireland. The hospital's catchment area includes several regional towns as well as extensive rural areas.

Following selection and confirmation of the two general hospital recruitment locations, further comprehensive study design then followed. This included a broad and complete nationally published and internationally based literature review on the subject matter of mental (in)capacity and the ability to consent to medical treatment in this specific medical and surgical inpatient hospital cohort of individuals. Supplementary data and material were also collected in relation to the options and alternatives for patient capacity assessment instruments and tools. Following review of this published information and as comprehensively detailed in the introduction chapter, the decision was made to utilise The MacArthur Competence Assessment Tool for Treatment (MacCAT-

T), accompanied by the criteria for mental capacity as outlined in the Assisted Decision-Making (Capacity) Act 2015 as the two mental capacity evaluation instruments for this research study. Following this decision, the author spent time becoming accustomed with both assessment tools proposed for use in this project, acquiring skills and familiarity with both of the assessment tools and also engaging in preparation and clinical practice using the assessment tools with the project supervisor.

Following this, a demographic data sheet was also conceived and developed, for collection and documentation of recruited patient demographic information, including the date of mental capacity assessment, the date of birth of the participant, the medical record number of the participant, gender, current primary treating team, the number of medical or surgical diagnoses, the body system affected by the primary/secondary/tertiary diagnoses and information relating to the person who signed the consent form for inclusion in the research study (the patient/relative/no one available) (Appendix B). This demographic data sheet form also contained information concerning the four criteria of mental capacity as defined by the Assisted Decision-Making (Capacity) Act 2015, the marital status of the participant, the ethnicity of the participant and the social class of the participant (Appendix B).

The selection of ethnicities included on the patient demographic data sheet form was designed and developed from previous Irish Central Statistics Office census evaluation of ethnicity and included a number of potential options for documenting study participant ethnicity, including White Irish, White Irish Traveller, any other White background, other including Mixed background, Black or Black Irish African, Black or Black Irish any other Black background, Asian or Asian Irish Chinese, Asian or Asian Irish any other Asian background and other (not stated) ethnic background (Government,

2012a). The marital status of all research study participants was also recorded and subcategories were also developed in line with previous Irish Central Statistics Office census evaluation of marital status and included documentation of marital status including those never married, married, separated, divorced or widowed (Government, 2012b).

The patient demographic data sheet form also documented the employment status of each study participant and again, comprised of categories present in the Irish Central Statistics Office census evaluation of employment status (Government, 2012b). Prior to the commencement of patient recruitment, the research study primary investigator met with both local hospital boards to discuss the proposed research and the feasibility of the patient recruitment process. Study information and documentation was provided to medical and nursing hospital managers, allied health professional hospital colleagues and associated healthcare specialists in order to notify and educate all relevant authorities and stakeholders of the forthcoming commencement of the research study and also to discuss any accompanying questions or potential concerns regarding the initiation of study patient recruitment. Following this, recruitment of patients for study inclusion began.

In January 2017 the patient recruitment process commenced in Tallaght University Hospital, Dublin and then subsequently relocated and continued in the Midland Regional Hospital, Portlaoise. 200 medical and surgical inpatients were initially recruited in Tallaght University Hospital, Dublin, with an additional 100 medical and surgical inpatients recruited in the Midland Regional Hospital Portlaoise. This patient recruitment process was conducted by the author and on a part-time basis, one day per week. This part-time recruitment of study participants was achievable through the application of allocated study and educational leave, permissible to the author as

delineated through the position as a higher specialist trainee with the College of Psychiatrists of Ireland and also as a Non-Consultant Hospital Doctor with the Health Service Executive. Patient recruitment was performed one day per week from January 2017 using the one allocated research study day per week as assigned as part of the higher specialist training scheme in psychiatry, together with allotted educational and study leave permitted over this period of time (a total of 4 weeks). All adult general medical and surgical inpatient wards of both general hospitals were included during patient recruitment, including the Intensive Care Unit of both hospitals and with the exception of Obstetrics and Gynaecology. The Accident & Emergency Department of either hospital was not included in the patient recruitment procedure as patients situated in this location of the hospital were deemed to be presently under medical/surgical assessment and therefore may not have been formally admitted to either the medical or surgical services of the hospital as yet. This patient recruitment process was completed in November 2017.

This recruitment process was thorough and systematic. This research project and the overall study design was planned intentionally and with a number of absolute inclusion criteria for this recruitment stage of the research study. For consideration for inclusion in this research study, a patient had to be admitted as either a medical or surgical inpatient in either Tallaght University Hospital, Dublin or Midland Regional Hospital, Portlaoise during the study period outlined. The medical or surgical inpatient also needed to be aged 18 years or over and be proficient in the English language. Identification of potential study participants for recruitment was achieved from both hospital inpatient census lists which were made available to the researcher by the hospital administration and/or nursing managers of both hospitals. Consequently, patients were

enlisted for the research study from each hospital ward and by using random numbers to select inpatients in each of these medical or surgical wards. This random selection of hospital inpatients was deemed imperative and essential to ensure, as much as was possible, a fair and non-discriminatory patient selection and recruitment process. Data collection was stratified by hospital ward in both general hospitals, as individual hospital wards tended to have particular kinds of patients admitted to them, for example, medical, surgical, elderly, intensive care etc. Once again, this was done intentionally and with a commitment to the selection, recruitment and inclusion of a wide variety of hospital inpatients with associated extensive medical diagnoses, an assortment of medical and surgical specialties, together with an overall variation of patient demographics.

2.2 Approach to patient consent

For this research study, it was essential that all patients eligible to participate in the project were approached and invited to do so, regardless of their level of objective mental capacity or incapacity. This approach to patient consent was done decisively and in order to gain a complete depiction of the prevalence of mental capacity and incapacity among all adult medical and surgical inpatients in both an urban and rural general hospital setting and ultimately to avoid, as much as was feasible, any associated selection bias of recruited study participants. Conducting research among general hospital participants of potentially questionable mental capacity and ultimately acquiring patient consent to partake in such a research study is associated with substantial moral and ethical difficulties (Rosenstein, 2004). Such challenges are compounded by the fact that many countries, including Ireland, lack appropriate and relevant legislation or guidelines

for research ethics committees in relation to performing research studies among persons who lack or may potentially lack mental capacity to consent to inclusion in such a research study project.

As there is this deficiency in such procedures and guidance in the current Irish legislation, specifically in relation to the provision of research among individuals that lack or may potentially lack mental capacity, this issue was comprehensively examined and discussed by the study primary investigator and author, using the framework of the United Kingdom's legislation regarding mental capacity, as found in the Mental Capacity Act 2005, Section 31/32/33 (Government, 2005). The guidance outlined within the Mental Capacity Act 2005 is also consistent with both nationally developed guidelines and international based standards in relation to the provision of completing research among individuals that lack or may potentially lack mental capacity (Authority, 2009, World Medical, 2009). For research study ethics committees assessing prospective studies on this subject matter of mental capacity to consent to research in the United Kingdom, Section 31 of the Mental Capacity Act 2005 outlines the following, 'requirements for approval', of potential research projects comprising study participants who lack or may lack mental capacity to consent to inclusion in such a research project:

1. The appropriate body (the research ethics committee) may not approve a research project for the purposes of this Act unless satisfied that the following requirements will be met in relation to the research carried out as part of the project on, or in relation to, a person who lacks mental capacity to consent to taking part in the project ('P').
2. The research must be connected with (a) an impairing condition affecting P, or (b) its treatment.

3. 'Impairing condition' describes a condition which is (or may be) attributable to, or which causes or contributes to (or may cause or contribute to) the impairment of, or disturbance in the functioning of, the mind or brain.
4. There must be reasonable grounds for believing that research of comparable effectiveness cannot be carried out if the project has to be confined to, or relate only to, persons who have capacity to consent to taking part in it.
5. The research must (a) have the potential to benefit P without imposing on P a burden that is disproportionate to the potential benefit to P, or (b) be intended to provide knowledge of the causes or treatment of, or of the care of persons affected by, the same or a similar condition.
6. If the research falls within paragraph (b) of subsection (5) but not within paragraph (a), there must be reasonable grounds for believing (a) that the risk to P from taking part in the project is likely to be negligible, and (b) that anything done to, or in relation to, P will not (i) interfere with P's freedom of action or privacy in a significant way, or (ii) be unduly invasive or restrictive.
7. There must be reasonable arrangements in place for ensuring that the requirements of sections 32 and 33 will be met.

Section 32 of the United Kingdom's Mental Capacity Act 2005, 'Consulting carers etc', outlines that:

1. This section applies if a person 'R' is (a) conducting an approved research project, and (b) wishes to carry out research, as part of the project, on or in relation to a person 'P' who lacks capacity to consent to taking part in the project.
2. R must take reasonable steps to identify a person who (a) otherwise than in a professional capacity or for remuneration, is engaged in caring for P or is

interested in P's welfare, and (b) is prepared to be consulted by R under this section.

3. If R is unable to identify such a person he must, in accordance with guidance issued by the appropriate authority, nominate a person who (a) is prepared to be consulted by R under this section, but (b) has no connection with the project.
4. R must provide the person identified under subsection (2), or nominated under subsection (3), with information about the project and ask him (a) for advice as to whether P should take part in the project, and (b) what, in his opinion, P's wishes and feelings about taking part in the project would be likely to be if P had capacity in relation to the matter.
5. If, at any time, the person consulted advises R that in his opinion P's wishes and feelings would be likely to lead him to decline to take part in the project (or to wish to withdraw from it) if he had capacity in relation to the matter, R must ensure (a) if P is not already taking part in the project, that he does not take part in it, or (b) if P is taking part in the project, that he is withdrawn from it.
6. But subsection (5)(b) does not require treatment that P has been receiving as part of the project to be discontinued if R has reasonable grounds for believing that there would be a significant risk to P's health if it were discontinued.
7. The fact that a person is the donee of a lasting power of attorney given by P, or is P's deputy, does not prevent him from being the person consulted under this section.
8. Subsection (9) applies if treatment is being, or is about to be, provided for P as a matter of urgency and R considers that, having regard to the nature of the research and of the particular circumstances of the case, (a) it is also necessary to

take action for the purposes of the research as a matter of urgency, but (b) it is not reasonably practicable to consult under the previous provisions of this section.

9. R may take action if, (a) he has the agreement of a registered medical practitioner who is not involved in the organisation or conduct of the research project, or (b) where it is not reasonably practicable in the time available to obtain that agreement, he acts in accordance with the procedure approved by the appropriate body at the time when the research project was approved under section 31.
10. But R may not continue to act in reliance on subsection (9) if he has reasonable grounds for believing that it is no longer necessary to take action as a matter of urgency.

Section 33 of the United Kingdom's Mental Capacity Act 2005, 'Additional safeguards', outlines that:

1. This section applies in relation to a person who is taking part in an approved research project even though he lacks capacity to consent to taking part.
2. Nothing may be done to, or in relation to, him in the course of the research, (a) to which he appears to object (whether by showing signs of resistance or otherwise) except where what is being done is intended to protect him from harm or to reduce or prevent pain or discomfort, or (b) which would be contrary to (i) an advance decision of his which has effect, or (ii) any other form of statement made by him and not subsequently withdrawn, of which R is aware.
3. The interests of the person must be assumed to outweigh those of science and society.

4. If he indicates (in any way) that he wishes to be withdrawn from the project, he must be withdrawn without delay.
5. P must be withdrawn from the project, without delay, if at any time the person conducting the research has reasonable grounds for believing that one or more of the requirements set out in section 31(2) to (7) is no longer met in relation to research being carried out on, or in relation to, P.
6. But neither subsection (4) nor subsection (5) requires treatment that P has been receiving as part of the project to be discontinued if R has reasonable grounds for believing that there would be significant risk to P's health if it were discontinued.

As a result, we formulated a detailed, multi-step consent procedure for both the Tallaght University Hospital/St. James's Hospital Joint Research Ethics Committee and also the Health Service Executive Midland Area Research Ethics Committee, Tullamore, County Offaly. Applications were prepared and delivered to the ethical committee groups of both of the patient recruitment locations, with detailed information provided to the committees in relation to the purpose, aims and objectives of the research study, together with the comprehensive patient consent and recruitment processes intended for use in this research project.

Auxiliary study documentation was also developed, including a participant and participant's relative information leaflet and also a patient consent and relative assent form. The participant and relative information leaflet included material related to the purpose of the research study, the reasons why this patient has been chosen to partake in the study, the process involved if the patient volunteer's to partake in the research study, information related to any risks or benefits involved in participating in the project,

information related to a participant not agreeing to partake in the research study, an outline that the participant or participant's relative can withdraw from the study at any time and that this will not impact on the patient's routine medical care, that this participation will be confidential, that the study has been granted ethical committee approval for the research project and finally the organisation and funding bodies in collaboration with the research study.

The consent forms also included very similar information, including the availability of the participant to read and understand the accompanying information leaflet, the ability to ask questions and discuss any aspect of the research study, to receive relevant answers in relation to the project, that the participant is free to withdraw from the study at any time without giving a reason and without this decision affecting future medical care and ultimately an agreement to participate in the research study. This consent form was then signed and dated by the participant or participant's relative and also by the study investigator.

Our project fulfilled all criteria as outlined in the United Kingdom's Mental Capacity Act 2005:

- Our proposed project is 'connected with (a) an impairing condition affecting P, or (b) its treatment, as mental capacity affects 'treatment decisions'
- The proposed participants lacking mental capacity will have an 'impairment of, or disturbance in the functioning of, the mind or brain, leading to mental incapacity.
- 'Research of comparable effectiveness cannot be carried out if the project has to be confined to, or related only to, persons who have capacity to consent to taking part in it', as this is research concerning mental capacity and therefore it is imperative to include patients with differing levels of mental capacity.

- The research has ‘the potential to benefit P without imposing on P a burden that is disproportionate to the potential benefit to P’ or is ‘intended to provide knowledge of the causes or treatment of, or of the care of persons affected by, the same or a similar condition’, again by clarifying issues relating to mental capacity in relation to ‘treatment’.
- There are ‘reasonable grounds for believing (a) that the risk to P from taking part in the project is likely to be negligible, and (b) that anything done to, or in relation to, P will not (i) interfere with P’s freedom of action or privacy in a significant way, or (ii) be unduly invasive or restrictive and the study assessment involved an interview and not any invasive procedure.

For this research study, the consent procedure was as follows:

- Any patient, with or without mental capacity, who was approached to potentially participate in the research study and who indicated in any way that he or she did not want to participate was excluded from the study immediately.
- We obtained written informed consent from patients with mental capacity to provide such consent. Information pertaining to the research study was provided to all patients (Appendix C). This documentation included an outline of the purpose of the study and associated information for participants of the study, as detailed above. There is a legal presumption of mental capacity in Ireland so it was only in cases where we had *prima facie* reason to believe that the patient lacked mental capacity to consent to the study that we could question the presumption of mental capacity of an individual to participate.
- For patients who lacked mental capacity to consent to the research study, we provided a next-of-kin/relative information leaflet and assent form and we

subsequently obtained assent in this fashion from their next-of-kin or relative when feasible (when a next-of-kin or relative was named and available). On receiving such assent, we proceeded with our assessments provided that patient assented and did not object to inclusion in the research study at any point. In such cases of relative assent, we sought ‘deferred consent’ if that patient regained mental capacity during the study period. If, on regaining mental capacity, any patient had declined to provide such ‘deferred consent’, we would have destroyed the associated data relating to that patient, but this circumstance did not arise in the study.

- For patients who lacked mental capacity to consent to the study and there was no next-of-kin or relative named or available, we proceeded with our capacity assessments provided the patient assented and did not object to inclusion in the research study at any point. In such cases, we sought ‘deferred consent’ if that patient regained mental capacity during the study period, If, on regaining mental capacity, any patient had declined to provide such ‘deferred consent’, we would have destroyed the associated data relating to that patient, but this circumstance did not arise in the study.

Ethical approval was subsequently granted from Tallaght University Hospital/St. James’s Hospital Joint Research Ethics Committee, Dublin, Ireland and also the Health Service Executive Midland Area Research Ethics Committee, Tullamore, County Offaly (Appendix A). This was a research study of usual practice using existing routine data and administration of an interview to evaluate current mental health care practice. It was performed in accordance with appropriate data protection and research regulations and the Declaration of Helsinki (World Medical, 2009). Data

were irrevocably anonymised, encrypted and stored on a password-protected research computer in a locked research office. Patient confidentiality was protected at all times.

2.3 Assessment of patient capacity to consent

As summarised above, the key outcome variable of interest for this research study was the prevalence of mental incapacity in an Irish general hospital medical and surgical inpatient population. As comprehensively discussed in the earlier chapters, this outcome was assessed using two assessment tools for capacity evaluation. The first assessment tool utilised in this research study to determine mental capacity was the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) (Appendix D). The second assessment tool employed in this research study to determine mental capacity was the criteria for mental capacity/mental incapacity as outlined and defined by the Assisted Decision-Making (Capacity) Act 2015. Other specific patient demographic variables of interest were incorporated in our research study design.

As outlined above, a patient demographic data sheet form was developed to detail additional significant pieces of individual patient information (Appendix B). This information was collected prior to the patient capacity assessment interview and by means of examining the patient's medical records and associated clinical materials. This information was subsequently transcribed onto the individual patient demographic data form and later entered into the statistical package. It must be highlighted that although

this information was gathered before the patient capacity evaluation took place, no specific medical, surgical or associated treatment information was discussed or shared with the study participant during the mental capacity assessment. The additional specific patient demographics for collection and documentation included the date of the mental capacity assessment, the patient's date of birth, the location of the hospital, the patient's individual hospital specific patient identification number or medical record number (MRN), along with the patient's gender, marital status, ethnicity, and social class.

Further auxiliary medical information was collected, including the current primary treating team (was the patient admitted under a medical or surgical team), the number of medical or surgical diagnoses present for each individual patient and the body system effected by the primary, secondary and tertiary diagnosis. The consent procedure was also documented during the patient participation process. This information included who consent or assent for study inclusion was received from, or alternatively, if there was no one available for either patient consent or relative assent. Further patient specific information was collected with regards to the criteria of mental capacity present on mental capacity assessment as outlined in the Assisted Decision-Making (Capacity) Act 2015, but this information was collated and recorded on the patient demographic data sheet form following the individual capacity assessment interview.

As detailed and summarised above, the first assessment tool we utilised during assessment for the presence or absence of mental capacity for medical treatment decisions was the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) (Appendix D) (Grisso and Appelbaum, 1998). The MacCAT-T is a semi-structured interview that yields individual scores on four separate study scales, understanding of the disorder and treatment, appreciation, reasoning and ability to express a choice, with

higher scores achieved indicating greater mental capacity of the individual. In the conclusion of the scoring of the MacCAT-T, when collating the overall scores of each participant on all four of the components of the assessment tool, understanding, appreciation, reasoning and expressing a choice, the total mental capacity score for each individual participant ranged from 0 to 20, again with higher scores demonstrating greater mental capacity of an individual.

Furthermore, total scores generated from the MacCAT-T assessment process indicate a continuous and therefore non-binary outcome of patient decision-making capacity and thus, without a final overall score indicating patient competence or incompetence. For this research study, the author and primary investigator concluded to perform additional statistical analysis on the results obtained from clinical capacity assessment using the MacCAT-T, therefore producing supplementary subtotal scores of the MacCAT-T from all individual study participants. This was completed for each of the four main sub-scales of the MacCAT-T, understanding, appreciation, reasoning and expressing a choice and each ranging from 0 to 2, where a score of 0 indicated that the patient lacked the ability to perform the task, a score of 1 indicated partial ability of that patient to perform the task and a score of 2 indicated adequate ability of that patient to perform the task. This practice of producing additional subtotal scores of the MacCAT-T for each individual study participant is consistent with established and published analytic methodology in a similar cohort of patients (Kolva et al., 2014).

On the Understanding subscale of the MacCAT-T (initially ranging from 0 – 6), scores ranging from 0 – 2 were deemed to be representative of a serious impairment in decision-making capacity or lack of ability in this task, scores of 5 or 6 were deemed to represent unimpaired or adequate ability for this task and therefore scores in between

were deemed to be borderline or indicate partial ability for this task. On the Appreciation subscale of the MacCAT-T (initially ranging from 0 – 4), scores beneath 2 were deemed to be impaired in this task, scores of 3 and above were deemed to be unimpaired in this task and all scores in between were deemed to be borderline or indicate partial ability for this task. On the reasoning subscale of the MacCAT-T (initially ranging from 0 – 8), scores below 4 were deemed to be impaired in this task, scores of 7 and 8 were deemed to be unimpaired in this task and all scores in between were deemed to be borderline or indicate partial ability for this task. On the Expressing a Choice subscale of the MacCAT-T (initially ranging from 0 – 2), a score of 0 indicated a lack of capacity in the task, a score of 2 indicated unimpaired capacity in this task and a score of 1 indicated impaired capacity for this task. This additional analysis and development of further subtotal scores of the MacCAT-T generated a second overall mental capacity score for each individual study participant ranging from 0 to 8, with a score of 0 indicating lack of mental capacity for treatment decisions, a score of 8 indicating full mental capacity for treatment decisions and scores between 0 and 8 indicating partial mental capacity for treatment decisions.

As delineated above, the second assessment tool utilised in this research study to evaluate and assess the presence or absence of mental capacity for medical treatment decisions was the as yet to be implemented Assisted Decision-Making (Capacity) Act 2015 (Government, 2015). Employment of this piece of legislation did generate a binary outcome of an individual's mental capacity or incapacity for medical treatment decisions. The Assisted Decision-Making (Capacity) Act 2015 states that 'a person lacks the capacity to make a decision if he or she is unable (a) to understand the information relevant to the decision; (b) to retain that information long enough to make a voluntary

choice; (c) to use or weigh that information as part of the process of making the decision; or (d) to communicate his or her decision (whether by taking, writing, using sign language, assistive technology, or any other means) or, if the implementation of the decision requires the act of a third party, to communicate by any means with that third party. Each of these four items was rated in a binary fashion (yes/no) and therefore, if an individual study participant received a ‘no’ on one or more of these four criteria for mental capacity, this patient was then deemed to lack mental capacity for medical treatment decisions according to the Assisted Decision-Making (Capacity) Act 2015.

All ratings of mental capacity or incapacity for medical treatment decisions for all individual study participants was performed by the author, a trained clinician with more than five years of training in psychiatry and additionally, membership of the Royal College of Psychiatrists. Throughout the duration of the study period the author had appropriate and ongoing supervision by the project primary investigator, who was also a trained assessor and familiar in using both the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) and the Assisted Decision-Making (Capacity) Act 2015. This process is consistent with previously established methodology and published articles of similar research studies (Raymont et al., 2004). For additional quality control measures, there were joint assessments of a number of medical and surgical inpatients with another trained clinician with more than five years training in psychiatry and membership of the Royal College of Psychiatrists, also under the supervision of the project primary investigator.

All data collected and recorded was entered into SPSS Statistical Package for Social Sciences 23.0 for Windows (SPSS Statistical Package for Social Sciences), which was used for all subsequent statistical analysis performed on the results of the entire

cohort of 300 study participants. The additional demographic data of study patients was initially analysed for descriptive frequencies and associated elementary statistics. A linear regression model was then generated with capacity score as per the MacCAT-T as the dependent variable. As detailed above, this capacity score was out of a maximum of 20 with higher scores indicating greater mental capacity of the individual. Independent variables of this linear regression analysis included the participants gender, age, marital status, employment status, ethnicity, location of hospital (urban or rural), current primary treating team (medical or surgical), body system of the primary diagnosis and number of diagnoses.

A binary logistic regression model was also produced, with mental capacity for treatment decisions (yes/no) as per the Assisted Decision-Making (Capacity) Act 2015 as the dependent variable. The independent variables of this binary logistic regression analysis included the participants gender, age, marital status, employment status, ethnicity, location of the hospital (urban or rural), current primary treating team (medical or surgical), body system of the primary diagnoses and number of diagnoses. Student *t*-test analysis was utilised to compare scores on all subscales of the MacCAT-T between study participants who had mental capacity for treatment decisions according to the Assisted Decision-Making (Capacity) Act 2015 and those who did not. We tested for multicollinearity, which is when two or more variables are so closely related to each other that the model cannot reliably distinguish the independent effects of each. For this, we calculated a ‘tolerance value’ for each independent variable (Katz, 2011). Tolerance values below 0.25 indicate possible multicollinearity and tolerance values below 0.10 indicate significant problems with multicollinearity. Sample size calculation based on current published comparable studies was not possible as this study does not utilize

comparison across different groups. Also, as the Assisted Decision-Making (Capacity) Act 2015 has not yet been inaugurated into Irish Law and therefore into the Irish legal and healthcare fields, the mental capacity criteria as outlined and defined by the 2015 Act have never previously been used in quantitative research studies. As a result of this, a sample size of 300 patients was selected based upon sample sizes quoted in previous similar published research studies on the subject matter of mental capacity to consent to medical treatment in the hospital setting (Raymont et al., 2004). Data were stored, described and analysed using the statistical package. There were no missing data.

Chapter 3: Results

Three hundred medical and surgical inpatients were randomly selected and recruited from two general hospital locations for this research study. 200 hospital inpatients, two-thirds of the total number of all study participants, were recruited from the urban recruitment location of Tallaght University Hospital Dublin, with a further 100 hospital inpatients, the remaining one-third of the total number of study participants, recruited from the second and predominantly rural recruitment location of the Midland Regional Hospital, Portlaoise. The results and outcomes of the collected data for all 300 individual study participants is detailed in the paragraphs and tables below, including analysis of the patient demographic descriptive statistics, outcomes of evaluations of participant mental capacity and incapacity as assessed using the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) and the Assisted Decision-Making (Capacity) Act 2015, further detailed linear and binary logistic regression analyses of the total patient cohort and in conclusion, the relationship between mental capacity and incapacity as assessed by the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) and the Assisted Decision-Making (Capacity) Act 2015.

3.1 Descriptive demographics of the patient cohort

The principal descriptive statistics of patient demographic data for the total cohort of 300 study participants recruited from both hospital locations for this research project is outlined in Table 1. Out of this total quantity of 300 medical and surgical study participants, 51.7% (n=155) were female patients, with the remaining 48.3% (n=145) of

study participants being male patients. The mean age of study participants was 70 years and with a standard deviation of 15.6 years. The majority of patients were White Irish (95.3%; n=286), with the remaining study individuals declaring non-Irish or other ethnicities (4.7%; n=14). Marital status, subcategorised in line with previous Irish Central Statistics Office Census evaluation was also documented in all study participants (Government, 2017a), with almost half of included patients citing that they were married at the time of the study inclusion (47.3%; n=142). One third of study participants stated that they were divorced, separated or widowed at the time of study recruitment (34.3%; n=103) and the remaining patients declared that they had never previously married (18.3%; n=55).

Data relating to employment status, subcategorised in line with previous Irish Central Statistics Office Census evaluation was also recorded and revealed that almost half of those surveyed for the research study were employed outside the home at the time of study inclusion (47.7%; n=143). A further 25.3% (n=76) confirmed that they were working in the home at the time of study recruitment, with 15.3% (n=46) of patients recruited declaring themselves unemployed at the time of study recruitment. With regards to the primary treating team of all study participants included in this research project, almost two-thirds of study participants (62.3%; n=187) were under the care of a medical specialist at the time of study recruitment, with the remaining one-third of study participants (37.7%; n=113) admitted under the care of a surgical team at the time of study recruitment.

The primary body system affected by the current illness or diagnosis was also documented and recorded in the patient demographic data sheet form and revealed that illnesses affecting the respiratory and gastrointestinal systems were the most commonly

documented ailments among the entire patient population studied, with 38.0% (n=114) of all study participants admitted to the hospital with either a respiratory or gastrointestinal concern at the time of study recruitment. Neurological illnesses accounted for 13.0% (n=39) of those admitted to hospital at the time of study recruitment, 11.7% (n=35) of patients were admitted with either infectious disease or musculoskeletal disorders and 10.7% (n=32) for cardiovascular disorders.

Data in relation to the number of diagnoses that patients were experiencing at the time of admission or that were identified in the clinical medical record was also collated and indicated that half of all study participants included in the research project were admitted to hospital with just one illness or disorder (52.7%; n=158). A further 39.3% (n=118) were admitted to hospital with two illnesses or disorders and the remaining 8.0% (n=24) had evidence of three or more illnesses or diagnoses documented on admission to hospital.

Table 1. Descriptive statistics for medical and surgical adult hospital inpatients in Ireland in whom mental capacity for treatment decisions was assessed.

Variables		All patients (n=300) n (%)
Gender	Women	155 (51.7)
	Men	145 (48.3)
Mean (SD) age (years)		70.2 (15.6)
Marital status	Never married	55 (18.3)
	Married	142 (47.3)
	Divorced, separated or widowed	103 (34.3)
Employment status	Employed outside the home	143 (47.7)
	Works in the home	76 (25.3)
	Unemployed	46 (15.3)
	Other	35 (11.7)
Ethnicity	Irish	286 (95.3)
	Non-Irish	14 (4.7)
Location of hospital	Urban	200 (66.7)
	Rural	100 (33.3)
Primary treating team	Medical	187 (62.3)
	Surgical	113 (37.7)
Primary body system affected by current illness	Respiratory	57 (19.0)
	Gastroenterology	57 (19.0)
	Neurology	39 (13.0)
	Musculoskeletal	35 (11.7)
	Infectious disease	35 (11.7)
	Cardiovascular	32 (10.7)
	Renal	13 (6.3)
	Other	26 (8.7)
Number of diagnoses	One	158 (52.7)
	Two	118 (39.3)
	Three or more	24 (8.0)

3.2 Mental capacity for medical treatment decisions as assessed using the MacArthur Competence Assessment Tool for Treatment (MacCAT-T)

As outlined above, mental capacity for medical treatment decisions was initially assessed in the total study population of 300 using the MacArthur Competence Assessment Tool for Treatment (MacCAT-T). The results of this analysis are further described in Table 2. Assessment and evaluation of a study participant's mental capacity using the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) yields results on four scales, understanding, appreciation, reasoning and expressing a choice, with higher scores indicating greater mental capacity of the individual. The mean MacCAT-T score of the inclusive study participant group (n=300) was 14.80 and with a standard deviation of 8.40. Results for each of the four scales of the MacCAT-T were generally consistent across the four key areas of capacity evaluation, understanding, appreciation, reasoning and expressing a choice.

For the purpose of a comprehensive evaluation and analysis of the overall MacCAT-T outcomes of the total study population, supplementary investigation was completed on these results, by generating further subtotal MacCAT-T scores for each of the four main scales of the MacCAT-T, understanding, appreciation, reasoning and expressing a choice. Each of these MacCAT-T sub-scale scores ranged from 0 to 2, where a score of 0 indicated that the patient lacked that ability to perform this element of the assessment, a score of 1 indicated that the patient had partial ability to perform this element of the assessment and a score of 2 indicated that the patient had full ability to perform this element of the assessment. Production of these MacCAT-T sub-scales and thus further inclusive subtotal MacCAT-T scores revealed a second and subsequent

overall score of mental capacity for each individual study participant, ranging from 0 to 8. A MacCAT-T total sub-scale score of 8 indicated full mental capacity for medical treatment decisions in a study participant, a score of 0 indicated a lack of mental capacity for medical treatment decisions in a study participant and all scores between 0 and 8 indicated partial mental capacity for medical treatment decisions in a study participant.

With regards to the understanding sub-scale results, 71.3% (n=214) of study participants scored 2, indicating full mental capacity in this sub-scale for medical treatment decisions, 2.0% (n=6) of study participants scored 1, indicating partial mental capacity in this sub-scale for medical treatment decisions and 26.7% (n=80) of study participants scored 0, indicating a lack of mental capacity in this sub-scale for medical treatment decisions. With regards to the appreciation sub-scale results, 75.3% (n=226) of study participants scored 2, indicating full mental capacity in this sub-scale for medical treatment decisions, 2.3% (n=7) of study participants scored 1, indicating partial mental capacity in this sub-scale for medical treatment decisions and 22.3% (n=67) of study participants scored 0, indicating a lack of mental capacity in this sub-scale for medical treatment decisions.

With regards to the reasoning sub-scale results, 71.0% (n=213) of study participants scored 2, indicating full mental capacity in this sub-scale for medical treatment decisions, 1.3% (n=4) of study participants scored 1, indicating partial mental capacity in this sub-scale for medical treatment decisions and 27.7% (n=83) of study participants scored 0, indicating a lack of mental capacity in this sub-scale for medical treatment decisions. With regards to the expressing a choice sub-scale results, 73.3% (n=220) of study participants scored 2, indicating full mental capacity in this sub-scale for medical treatment decisions, 3.3% (n=10) of study participants scored 1, indicating

partial mental capacity in this sub-scale for medical treatment decisions and 23.3% (n=70) of study participants scored 0, indicating a lack of mental capacity in this sub-scale for medical treatment decisions. The MacCAT-T sub-scale and subtotal scores of overall mental capacity in each study partaker revealed that over one quarter of all study participants (27.7%; n=83) lacked mental capacity for hospital and medical treatment decisions at the time of study recruitment, 1.7% (n=5) of study participants had partial mental capacity for hospital and medical treatment decisions and 70.7 % (n=212) of study participants had full mental capacity for hospital and medical treatment decisions.

Table 2. Mental capacity sub-scores in medical and surgical adult hospital inpatients assessed using the MacArthur Competence Assessment Tool for Treatment (MacCAT-T)

Sub-scale ^a	Sub-score ^b	n (%)
Understanding	2	214 (71.3)
	1	6 (2.0)
	0	80 (26.7)
Appreciation	2	226 (75.3)
	1	7 (2.3)
	0	67 (22.3)
Reasoning	2	213 (71.0)
	1	4 (1.3)
	0	83 (27.7)
Expressing a choice	2	220 (73.3)
	1	10 (3.3)
	0	70 (23.3)

^a n = 300.

^b All sub-scores range from 0 to 2, with higher scores indicating greater mental capacity of the patient.

3.3 Statistical analysis of patient demographics as per the MacArthur Competence Assessment Tool for Treatment (MacCAT-T)

Further statistical analysis was performed on the overall patient demographic scores of the total recruited study population (n=300) as assessed using the MacArthur Competence Assessment Tool for Treatment (MacCAT-T). This examination included utilising a linear regression analysis model and the results of this additional analysis are further detailed in Table 3. This linear regression analysis model of patient demographic details and mental capacity scores as per the MacCAT-T was completed using the statistical package, with mental capacity of the study participant defined as the dependent variable and the associated specific patient demographic details defined as the independent variables. These independent variables were those specific patient demographic particulars collected on the patient demographic data sheet form and included each study participant's gender, marital status, employment status, ethnicity, location of the hospital where the capacity assessment took place, the primary treating team, the primary body system affected by the current illness and the number of medical or surgical diagnoses.

Outcomes and results of this additional statistical analysis involving the patient demographic data and the mental capacity assessment conclusions as detailed by the MacCAT-T revealed a number of statistically significant relationships between the dependent and independent variables. Firstly, the age of study participants was significantly associated with the subsequent mental capacity scores, with older age of individuals inversely correlated with the overall mental capacity scores ($p < 0.001$; $\beta = -0.127$). Additionally, patient demographic data detailing the marital status of study

participants and specifically those individuals who had never married, were significantly associated with mental incapacity as per the MacCAT-T ($p=0.023$; $\beta=1.522$). Those medical or surgical inpatients who described their employment status as currently not working outside of the home revealed statistically significant results in relation to increased mental incapacity as per the MacCAT-T ($p<0.001$; $\beta=-2.826$). Furthermore, a study participant currently under the care of a medical primary treating team as opposed to a surgical primary treating team had statistically significant results with regards to increased mental incapacity as per the MacCAT-T ($p=0.001$; $\beta=3.183$). Moreover, there was a statistically significant association between study participants with greater numbers of medical or surgical diagnoses and their accompanying mental capacity score as per the MacCAT-T, with increased mental incapacity noted in those with greater numbers of diagnoses ($p<0.001$; $\beta=-2.519$). This linear regression analysis model further outlined that were no statistically significant relationships found between the study participant's overall mental capacity/incapacity scores and the remaining independent variable studied, including the gender, ethnicity, the location of the hospital or the body system affected by the current illness/illnesses or diagnosis/diagnoses.

Table 3. Statistical analysis of patient demographics as per the MacArthur Competence Assessment Tool for Treatment (MacCAT-T)

Variables		Linear regression analysis of mental capacity score as per MacCAT-T ^a		
		β	p	Tolerance value ^b
Gender	Women	-1.198	0.196	0.813
	Men			
Mean (SD) age (years)		-0.127	<0.001	0.772
Marital status	Never married	1.522	0.023	0.778
	Married			
	Divorced, separated or widowed			
Employment status	Employed outside the home	-2.826	<0.001	0.828
	Works in the home			
	Unemployed			
	Other			
Ethnicity	Irish	-1.002	0.616	0.984
	Non-Irish			
Location of hospital	Urban	0.672	0.151	0.897
	Rural			
Primary treating team	Medical	3.183	0.001	0.765
	Surgical			
Primary body system affected by current illness	Respiratory	-0.307	0.114	0.813
	Cardiovascular			
	Renal			
	Neurology			
	Infectious disease			
	Musculoskeletal			
	Gastroenterology			
	Other			

Number of diagnoses	One	-2.519	<0.001	0.917
	Two			
	Three or more			

^a Linear regression analysis of mental capacity for treatment decisions with mental capacity score (out of 20; higher score indicating greater mental capacity) as per the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) as the dependent variable; $r^2=26.1\%$; $p<0.001$.

^b All tolerance values were greater than 0.25 indicating no problems with multicollinearity (Katz, 2011).

3.4 Mental capacity as assessed using the Assisted Decision-Making (Capacity) Act 2015

As described in greater detail above, mental capacity for medical treatment decisions in this research study sample of 300 medical and surgical general hospital inpatients was also assessed and evaluated using a second capacity assessment tool, the criteria for mental capacity as outlined and defined by the Assisted Decision-Making (Capacity) Act 2015. This legislation delineates that a person lacks mental capacity to make a decision if he or she is unable, (a) to understand the information relevant to the decision; (b) to retain that information; (c) to use or weigh up that information as part of the process of making the decision; or (d) to communicate his or her decision (whether by talking, writing, using sign language, assisted technology, or any other means), or if the implementation of the decision requires the act of a third party, to communicate by any means with that third party.

Results of mental capacity scores as assessed using the Assisted Decision-Making (Capacity) Act 2015 are summarised in Table 4. Global results of the prevalence of mental incapacity in this study participant population revealed that 83 (27.7%) study participants recruited and included in the research study were lacking in mental capacity for medical treatment decisions as defined by the Assisted Decision-Making (Capacity) Act 2015. Additional detailed analysis of the specific criteria for mental capacity as defined by the 2015 Act were also examined. With regards to the first criteria for mental capacity as outlined by the 2015 Act, the ability to understand the information relevant to the decision, 232 (77.3%) of study participants fulfilled this standard but the remaining 68 (22.7%) did not. With regards to the second criteria for mental capacity as outlined by

the 2015 Act, the ability to retain that information long enough to make a voluntary decision, 219 (73.0%) of study participants fulfilled this standard but the remaining 81 (27.0%) did not. With regards to the third criteria for mental capacity as outlined by the 2015 Act, the ability to use or weigh up that information as part of the process of making the decision, 220 (73.3%) of study participants fulfilled this standard but the remaining 80 (26.7%) did not. Finally, with regards to the final and outstanding criteria for mental capacity as outlined by the 2015 Act, the ability to communicate his or her decision, 229 (76.3%) of study participants fulfilled this standard but the remaining 71 (23.7%) did not.

Table 4. Mental capacity scores as per the Assisted Decision-Making (Capacity) Act 2015

Capacity assessment as per the Assisted Decision-Making (Capacity) Act 2015		Has mental capacity n (%)	Lacks mental capacity n (%)
All patients (n=300)		217 (72.3)	83 (27.7)
Criteria for mental capacity as per the Assisted Decision-Making (Capacity) Act 2015			
1.	Able to understand the information relevant to the decision	232 (77.3)	68 (22.7)
2.	Able to retain that information long enough to make a voluntary decision	219 (73.0)	81 (27.0)
3.	Able to use or weigh up that information as part of the process of making the decision	220 (73.3)	80 (26.7)
4.	Able to communicate his or her decision	229 (76.3)	71 (23.7)

3.5 Descriptive demographics and statistical analysis of mental capacity as assessed using the Assisted Decision-Making (Capacity) Act 2015

As detailed above, mental capacity for medical treatment decisions in this study population was assessed using the criteria for mental capacity as defined in Ireland's new Assisted Decision-Making (Capacity) Act 2015. Complete details and results of this analysis is outlined in Table 5. Throughout this additional statistical analysis, consistency was retained in relation to the associated participant demographic variables that were assessed in the statistical analysis. These independent variables included the study participant's gender, age, marital status, employment status, ethnicity, the location of the hospital where the capacity assessment took place, the primary treating team, the primary body system affected by the current illness and the number of medical or surgical diagnoses. These patient demographic variables did not differ between the study participants who had mental capacity according to the Assisted Decision-Making (Capacity) Act 2015 (72.3%; n=217) and those who did not (27.7%; n=83) ($p>0.05$ in all cases).

Additionally, a binary logistic regression model of statistical analysis was generated, with mental capacity intact for medical treatment decisions (yes/no) as per the Assisted Decision-Making (Capacity) Act 2015 outlined as the dependent variable, and the independent variables as previously discussed, including the patient's gender, age, marital status, employment status, ethnicity, the location of the hospital where the capacity assessment took place, the primary treating team, the primary body system affected by the current illness and the number of medical or surgical diagnoses. Once more, this additional statistical analysis revealed a number of statistically significant

relationships between a study participant's mental capacity for medical treatment decisions as defined by the Assisted Decision-Making (Capacity) Act 2015 and a number of the examined independent patient demographic variables.

Firstly, data outlining the age of study individuals revealed a statistically significant relationship with mental capacity, with the older age of participants negatively correlated with the overall mental capacity score as assessed by the Assisted Decision-Making (Capacity) Act 2015 ($p < 0.001$; $\beta = -0.060$). Additionally, the marital status of study participants, specifically the individuals who had never married, revealed a statistically significant relationship, with increased mental incapacity in this subcategory of study participants ($p = 0.020$; $\beta = 0.582$). Those study participants who described their employment status as currently not working outside of the home revealed statistically significant results in relation to mental incapacity as per the 2015 Act ($p < 0.001$; $\beta = -0.862$).

Furthermore, a study participant currently under the care of a medical primary treating team as opposed to a surgical primary treating team had statistically significantly results when comparing their mental capacity scores as per the 2015 Act, with increased prevalence of mental incapacity in this cohort of hospital patients ($p = 0.001$; $\beta = 1.255$). Moreover, there was a statistically significant association between study individuals with a higher number of medical or surgical diagnoses and mental incapacity as per the Assisted Decision-Making (Capacity) Act 2015 ($p < 0.001$; $\beta = -0.984$). Similar to the linear regression analysis of mental capacity scores as detailed by the MacCAT-T, this binary logistic regression analysis of study participants mental capacity status as outlined by the criteria of the Assisted Decision-Making (Capacity) Act 2015 and the outstanding demographic independent variables of a patient's gender, ethnicity, location of the

hospital where the capacity assessment took place and body system of affected by the current illness, revealed no statistically significant relationships or associations.

Table 5. Descriptive demographics and statistical analysis of mental capacity as assessed using the Assisted Decision-Making (Capacity) Act 2015

Variables		All patients (n=300)	Mental capacity status as per the Assisted Decision-Making (Capacity) Act 2015		Binary logistic regression analysis of mental capacity status as per the Assisted Decision-Making (Capacity) Act 2015 ^a	
			Has mental capacity (n=217)	Lacks mental capacity (n=83)	β	<i>p</i>
Gender	Women	155 (51.7)	111 (51.4)	44 (52.4)	-0.579	0.110
	Men	145 (48.3)	105 (48.6)	40 (47.6)		
Mean (SD) age (years)		70.2 (15.6)	68.0 (14.6)	75.7 (16.9)	-0.060	<0.001
Marital status	Never married	55 (18.3)	37 (17.1)	18 (21.4)	0.582	0.020
	Married	142 (47.3)	103 (47.7)	39 (46.4)		
	Divorced, separated or widowed	103 (34.3)	76 (35.2)	27 (32.1)		
Employment status	Employed outside the home	143 (47.7)	122 (56.5)	21 (25.0)	-0.862	<0.001
	Works in the home	76 (25.3)	52 (24.1)	24 (28.6)		
	Unemployed	46 (15.3)	32 (14.8)	14 (16.7)		
	Other	35 (11.7)	10 (4.6)	25 (29.8)		
Ethnicity	Irish	286 (95.3)	206 (95.4)	80 (95.2)	-0.484	0.485
	Non-Irish	14 (4.7)	10 (4.6)	4 (4.8)		
Location of hospital	Urban	200 (66.7)	142 (65.7)	58 (69.0)	0.327	0.062
	Rural	100 (33.3)	74 (34.3)	26 (31.0)		
Primary treating team	Medical	187 (62.3)	120 (55.6)	67 (79.8)	1.255	0.001
	Surgical	113 (37.7)	96 (44.4)	17 (20.2)		
Primary body system affected by current illness	Respiratory	57 (19.0)	41 (19.0)	16 (19.0)	-0.107	0.125
	Cardiovascular	32 (10.7)	25 (11.6)	7 (8.3)		
	Renal	19 (6.3)	16 (7.4)	3 (3.6)		
	Neurology	39 (13.0)	17 (7.9)	22 (26.2)		
	Infectious disease	35 (11.7)	23 (10.6)	12 (14.3)		
	Musculo-skeletal	35 (11.7)	25 (11.6)	10 (11.9)		
	Gastro-enterology	57 (19.0)	46 (21.3)	11 (13.1)		
	Other	26 (8.7)	23 (10.6)	3 (3.6)		

Number of diagnoses	One	158 (52.7)	131 (60.6)	27 (32.1)	-0.984	<0.001
	Two	118 (39.3)	78 (36.1)	40 (47.6)		
	Three or more	24 (8.0)	7 (3.2)	17 (20.2)		

^a Binary logistic regression analysis of mental capacity for medical treatment decisions with mental capacity status (yes/no) as per the Assisted Decision-Making (Capacity) Act 2015 as the dependent variable; $r^2=40.1\%$; $p<0.001$.

3.6 The relationship between mental capacity as per the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) and the Assisted Decision-Making (Capacity) Act 2015

The correlation between the mental capacity for medical treatment decisions of study participants as evaluated by the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) and the Assisted Decision-Making (Capacity) Act 2015 is outlined in Table 6. Among the 83 study participants (27.7% of the overall sample) who lacked mental capacity for medical treatment decisions under the criteria as outlined by the Assisted Decision-Making (Capacity) Act 2015, a majority of such study participants (75.0%) met all four criteria for mental incapacity. This documented three-quarters of total general hospital inpatient population included in this research study were unable to understand the relevant information in order to make a medical treatment decision, retain this information for long enough to make the decision, weigh up all necessary information and ultimately communicate an informed decision.

Furthermore, additional analysis revealed that ten hospital inpatients (11.9%) met three of the criteria as outlined by the Assisted Decision-Making (Capacity) Act 2015 for mental incapacity, seven hospital inpatients (8.3%) met two of the criteria as outlined by the Assisted Decision-Making (Capacity) Act 2015 for mental incapacity and four hospital inpatients (4.8%) met one of the criteria as outlined by the Assisted Decision-Making (Capacity) Act 2015 for mental incapacity. Additionally, in relation to such criteria for mental incapacity for medical treatment decisions as outlined in the 2015 Act, of the total cohort of patients sampled (n=300), 22.7% were unable to understand the information relevant to the medical treatment decision, 27.0% were unable to retain this

information for long enough to make the decision; 26.7% were unable to weigh up this information; and 23.7% were unable to communicate their informed decision.

As stated and detailed above, the mean MacCAT-T score for the entire sample of study participants (n=300) was 14.80 (standard deviation [SD]: 8.40), with higher scores on the MacCAT-T indicating greater mental capacity for medical treatment decisions. The mean MacCAT-T score among patients who had mental capacity according to the Assisted Decision-Making (Capacity) Act 2015 was significantly higher than that for those who lacked mental capacity according to the Assisted Decision-Making (Capacity) Act 2015 (19.89, SD: 0.60 versus 1.69, SD 3.47; $t=47.749$, $p<0.001$). Student *t*-tests were also used to compare scores on all sub-scales of the MacCAT-T between those inpatients who had mental capacity for medical treatment decisions as per the Assisted Decision-Making (Capacity) Act 2015 and those who did not. Patients who had mental capacity according to the Assisted Decision-Making (Capacity) Act 2015 scored significantly higher than those who lacked it on all sub-scales of the MacCAT-T.

Table 6. The relationship between mental capacity for treatment decisions assessed using (a) legislation (Ireland's new Assisted Decision-Making (Capacity) Act 2015) and (b) a semi-structured interview (MacArthur Competence Assessment Tool for Treatment (MacCAT-T)).

MacArthur Competence Assessment Tool for Treatment (MacCAT-T) scale	MacCAT-T sub-scale	MacCAT-T sub-scale scores (rated from 0 to 2, with higher scores indicating greater mental capacity)			Student <i>t</i> -test comparing MacCAT-T sub-scale scores in patients with and without mental capacity as per the Assisted Decision-Making (Capacity) Act 2015	
		All patients (n=300)	Patients with mental capacity as per the Assisted Decision-Making (Capacity) Act 2015 (n=217)	Patients without mental capacity as per the Assisted Decision-Making (Capacity) Act 2015 (n=83)	<i>t</i>	<i>p</i>
Understanding	Disorder	1.48 (0.84)	1.99 (0.07)	0.16 (0.34)	75.634	<0.001
	Treatment	1.47 (0.86)	1.98 (0.10)	0.13 (0.35)	71.120	<0.001
	Benefit/risks	1.45 (0.87)	1.98 (0.14)	0.08 (0.25)	81.640	<0.001
	Summary	4.39 (2.56)	5.95 (0.25)	0.40 (0.95)	79.497	<0.001
Appreciation	Disorder	1.53 (0.82)	1.99 (0.10)	0.33 (0.63)	37.712	<0.001
	Treatment	1.52 (0.83)	2.00 (0.00)	0.30 (0.62)	40.682	<0.001
	Summary	3.05 (1.64)	3.99 (0.10)	0.62 (1.16)	42.433	<0.001
Reasoning	Consequential	1.44 (0.88)	1.98 (0.15)	0.70 (0.30)	72.481	<0.001
	Comparative	1.44 (0.88)	1.98 (0.14)	0.06 (0.24)	87.841	<0.001
	Generate consequences	1.49 (0.85)	2.00 (0.00)	0.17 (0.41)	66.577	<0.001
	Logical consistency	1.48 (0.85)	1.99 (0.10)	0.18 (0.44)	56.866	<0.001

	Summary	5.86 (3.43)	7.95 (0.30)	0.46 (1.18)	86.719	<0.001
Expressing a choice		1.50 (0.85)	2.00 (0.00)	0.21 (0.52)	50.946	<0.001

Chapter 4: Discussion

4.1 Patient demographics

This research study evaluated the mental capacity of 300 medical and surgical inpatients in both an urban and rural general hospital setting in Ireland, Tallaght University Hospital, Dublin, County Dublin and Midland Regional Hospital, Portlaoise, County Laois. From the comprehensive examination of both national and internationally previous published literature and research articles on this subject matter of mental capacity in hospital inpatients, it would appear that this research project is one of the largest studies of this nature and is in keeping with a correspondingly sized previously published cross-sectional research study from London, which recruited 302 acute medical inpatients over an eighteen month study period (Raymont et al., 2004). However, this study by Raymont and colleagues was designed quite differently in comparison with our study and furthermore assessed mental capacity for treatment decisions only in acute medical inpatients on a general medical hospital ward and therefore, the authors did not include any elective or surgically admitted hospital inpatients over this study period of eighteen months. Patients were recruited from two acute general medical wards in a large London teaching hospital over this study time period and inclusion criteria for participation in the study included an admitted medical patient that had any current diagnosis and treatment plan.

Results and outcomes from this study by Raymont et al. indicated that although 302 acute medical inpatients were initially included in this research study, 143 medical inpatients were not subsequently interviewed or included in any further aspects of this

research study and therefore excluded from the project at this initial stage of recruitment. Of the total number of medical inpatients included in the formal assessment of mental capacity for medical treatment decisions, 31% were deemed not to have mental capacity for such decisions, with the authors further expressing their belief of a potential prevalence of mental incapacity for medical treatment decisions in the complete number of initial participants (n=302) of at least 40% (Raymont et al., 2004).

This study design by Raymont and colleagues differs significantly from our research study design. During the initial stages of planning and development of this research study and when considering the crucial and essential processes of potential patient recruitment, it was decided to randomly and unsystematically select 300 medical and surgical inpatients from all hospital wards of two general hospitals, one hospital urban based and the other hospital more rurally based. This study design was intentional and deliberate, as it was felt to be extremely necessary to strategically and randomly select medical and surgical inpatients from all wards of both hospital settings, including the Intensive Care Unit of both locations and only excluding the Accident and Emergency Department at the very initial stage of the patient recruitment process. It was also deemed imperative by both the study primary investigator and the author not to exclude those medical or surgical inpatients who were unable or potentially unable to participate or consent to inclusion in the research study due to their objective level of consciousness, presence of a documented severe cognitive impairment or conversely, elective or surgically admitted hospital inpatients. This was performed in an attempt to obtain, as much as was feasible, a truly accurate and representative depiction of the cross-sectional prevalence of mental incapacity in an urban and rural general hospital population in Ireland.

As discussed previously in the above chapters in greater detail, there have been a number of additional international research studies performed and published in relation to the level of mental incapacity for medical treatment decisions in the general hospital inpatient population. However, the majority of these supplementary studies were achieved on significantly lower study participant numbers than either this research study or the study published by Raymont et al. A comparable research study to the one published by Raymont and colleagues is provided by Bilanakis and colleagues (Bilanakis et al., 2014). This study aspired to gauge the decision-making capacity for medical treatment decisions in a cohort of medically admitted inpatients of an internal medicine ward of a general hospital in Greece. Initially, a total of 134 medical inpatients were approached to participate in the research study but 56 patients were subsequently excluded from the interview stage of patient participation. However, the authors of this study did include those medical inpatients, estimated from this exclusion group to be 'evident not capable', in the final research study published results and overall the authors revealed a 50.7% (n=68) total number of medical inpatients lacking mental capacity for medical treatment decisions.

Two systematic reviews published in relation to the prevalence of mental incapacity for medical treatment decisions among general hospital inpatients revealed a level of mental incapacity in this cohort of patients of between 26% (Sessums et al., 2011) and 34% (Lepping et al., 2015). Sessums et al. presented a review of 43 research articles evaluating the prevalence of mental incapacity in adult medical inpatients with a number of associated diverse clinical diagnoses and indicated a 26% level of mental incapacity among medical inpatients. Furthermore, the prevalence of mental incapacity in individuals with a diagnosis of Alzheimer's disease was reported at 54% and additionally,

68% of participants with an associated learning disability had mental incapacity for medical treatment decisions. Lepping and colleagues performed a systematic review and encompassed articles from both medical and psychiatric settings, with capacity evaluation performed using a validated tool and ultimate capacity results presented in a binary outcome. This yielded only 23 studies of capacity assessment in the medical inpatient setting and with increased mental incapacity documented in medical patients with a presentation of delirium, neurological diagnoses and associated comorbidity of a learning disability.

In summary, with regards to direct comparison with current published research literature on the subject matter of decision-making capacity and incapacity among hospital inpatients, our research study is significantly diverse and, in some aspect's, potentially superior to those further discussed above. This research study endeavours to provide a cross-sectional prevalence of the level of mental incapacity for medical treatment decisions in an all-inclusive general inpatient hospital population in Ireland, including all medical and surgical wards of two general hospitals, one predominantly urban based and the other primarily rurally based and critically, without the exclusion of any patient solely based on their objective level of consciousness, with or without evident communication difficulties, the presence of cognitive impairment of any degree and hospital admission criteria incorporating the most benign to the most severe medical or surgical diagnoses. Nonetheless, comparable to the above research studies on mental capacity and incapacity in general hospital inpatients, participants were excluded from our research study if they did not consent to partake in the study or if they were incapable of engagement with the capacity assessment interview based on their level of verbal communication through English.

Demographic data collected from our complete study participation group (n=300) is principally conveyed in Table 1 in the results chapter. There was essentially an equal number of both male and female study inpatients randomly selected for participation in this research project, specifically with 51.7% (n=155) female participants and 48.3% (n=145) male participants. This gender balance of study contributors was largely anticipated given the random selection of study participants and inclusion of all wards of the general hospital and correspondingly, is in keeping with similar published research studies as detailed above (Raymont et al., 2004).

Of note, our study is especially comparable to the research study by Bilanakis and colleagues, which reported 51.3% of female study patients and 48.7% male study patients (Bilanakis et al., 2014). The mean age of our study participants was 70 years and with an associated standard deviation of 15.6 years. Once again this outcome and the observable older age of this inpatient cohort was predicted and forecast from the initial literature review on this subject matter, with the increased propensity of medical or surgical hospitalisation in this older cohort of patients and furthermore, as detailed in the most recent national figures for acute public hospital inpatient demographics, the documentation that the 65 years and older age group accounted for 31.8% of inpatient discharges and 53.3% of inpatient bed days in the year 2016 (Office, 2017). This outcome of a mean age of study participants of 70 years and therefore an older cohort of study participants is again comparable to previously published research studies on this topic.

Raymont and colleagues presented study results including a mean age of research participants of 64.2 years and an associated standard deviation of 19.9 years. (Raymont et al., 2004) and additionally, Bilanakis et al. reported a mean age of included medical inpatients of 61.8 years and an associated standard deviation of 21.3 years (Bilanakis et

al., 2014). Kolva and colleagues assessed mental capacity for medical treatment decisions in patients at the end of life and also in terminally ill patients and outlined a mean age of 69.2 years (standard deviation of 13.1 years) (Kolva et al., 2014) and 69.6 years (standard deviation of 10.1 years) (Kolva et al., 2018) respectively. Although there is minimal difference in the reported mean age of study participants between our study and similar internationally published studies, the author has hypothesised that our cohort of study participants may perhaps be slightly older than previously published international reports due to the inclusion of a wider variety of general hospital wards, in both an urban and rural hospital setting, notably the presence of the Intensive Care Unit of both general hospitals and therefore with an associated broader assortment of medical and surgical diagnoses and correspondingly, the lack of exclusion of those medical or surgical inpatients potentially deemed to be the most critically ill.

Categorisation of the ethnicity of our entire study population revealed that 95.3% (n= 286) of participants were Irish, with the remaining 4.7% (n=14) of inpatients asserting non-Irish or other ethnicities, including White Irish Traveller (0.3%; n=1), Black or Black Irish African (3.0%; n=9), Asian or Asian Irish Chinese (0.3%; n=1) and Any Other White Background (1.0%; n=3). The patient demographic data sheet form used in this research study was designed and developed from previous Irish Central Statistics Office census evaluation of ethnicity and included a number of potential options for documenting patient ethnicity, including White Irish, White Irish Traveller, any other White background, other including Mixed background, Black or Black Irish African, Black or Black Irish any other Black background, Asian or Asian Irish Chinese, Asian or Asian Irish any other Asian background and other (not stated) ethnic background (Government, 2012a) (Appendix B).

Although this study result does indicate that a considerable majority of study participants were of Irish ethnicity, overall this study result is comparable with the most recent Irish Central Statistics Office 2016 census results, which outlined that 82% of people included in this census identified themselves as White Irish (Government, 2017a). This result detailing that this research study included a majority of White Irish participants is likely to be considerably higher given the probable likelihood of a larger proportion of ethnically diverse individuals to be in the lower age groups of the Irish population and therefore, substantially less likely to be medically or surgically admitted to a general hospital. The result may also include a higher number of White Irish individuals due to the potential exclusion of any individual not proficient enough in the English language to engage in the study capacity assessment process due to a potential language barrier. In comparison with our study, Raymont et al. reported 84% (n=133) of their study participants were of White European ethnicity, 15% were of African-Caribbean ethnicity and 1% were of Greek-Cypriot ethnicity. Of note, the study setting in this research article was King's College London, an exceedingly ethnically diverse community (Raymont et al., 2004).

The marital status of all research study participants was also documented and again, subcategories were developed in line with previous Irish Central Statistics Office census evaluation of marital status (Government, 2012b) and included documentation of marital status including those never married, married, separated, divorced or widowed (Appendix B). Results of study participant marital status outlined that 47.3% (n=142) of study participants were married at the time of inclusion in the research study, a further 18.3% (n=55) were not married and remaining study participants were either divorced (0.3%; n=4), separated (5.0%; n=15) or widowed (28.0%; n=84). Irish Central Statistics

Office census results from 2016 indicated that 37.6% of the population were married and 41.1% of individuals were single (Government, 2017a). Marital status results of this research study revealed a lower percentage of individuals in the never married category compared to the 2016 census results but again this study result is potentially related to the older age predominance of our study population and the increased probability of single status in the younger age population. Our study results are comparable to those described and published by Raymont et al. in relation to marital status, which outlined that 27.7% (n=44) of study participants were married, 28.9% (n=46) were not married and the remaining 43.4% (n=69) were either separated, divorced or widowed (Raymont et al., 2004). Bilanakis and colleagues also reported similar research study results in relation to marital status, with 57.7% of participants married, 24.4% single and the remaining 17.9% divorced or widowed (Bilanakis et al., 2014).

Employment status of our cohort of study participants was also documented on our patient demographic data sheet form and also comprised of several potential subcategories present in the Irish Central Statistics Office census evaluation of employment status (Government, 2012b) (Appendix B). Results of employment status in this research study specified that 47.7% (n=143) of study participants were employed outside of the home at the time of study inclusion, 25.3% (n=76) described themselves as working in the home, 15.3% of study participants were unemployed and the remaining 11.7% (n=35) of individuals were recorded in the otherwise not specified category in relation to their employment status. The most recent Irish Central Statistics Office 2016 census figures revealed a total labour force in Ireland of 61.4%, with the remaining 38.6% reported to be not in the labour force and of note, a 19.2% increase in the number of retired people between 2011 and 2016 (Government, 2017b).

There were no comparable documentation or results of employment status in the similar previously published research studies on this subject matter (Bilanakis et al., 2014, Fitten and Waite, 1990, Kolva et al., 2018, Lepping et al., 2015, Okonkwo et al., 2008, Raymont et al., 2004, Sessums et al., 2011). Raymont and colleagues did document the mean and standard deviation years of education of their study participants, with those with intact mental capacity for medical treatment decisions attaining 11.3 years (standard deviation of 2.3 years) of education and conversely, those without mental capacity for medical treatment decisions attaining slightly less years of formal education, 9.9 years (standard deviation of 2.6 years) (Raymont et al., 2004). Bilanakis et al. documented the level of education attained by their study participants and results indicated that 34.6% of study participants attained an education to high school level and beyond (Bilanakis et al., 2014).

Additional study information was also collected and documented in relation to the primary treating team of each study participant, their recorded medical or surgical diagnoses and the body system of the primary, secondary and tertiary illness or disorder of each individual study participant of this research project (Appendix B). This information revealed that almost two-thirds/62.3% (n=187) of study participants were under the care of a medical specialist, while the remaining one third/37.7% (n=113) were admitted under the care of a surgical team. As described above, there are a number of previously published research studies involving mental capacity assessment of medical decision-making ability among specific inpatient hospital groups or particular hospital wards, including cardiology inpatients, acute medical and general hospital wards, specific elderly populations, end of life and terminal inpatients and those with specific medical and/or surgical diagnoses or disorders including mild cognitive impairment, neurological

disorders and Alzheimer's disease (Appelbaum and Grisso, 1997, Bilanakis et al., 2014, Fitten and Waite, 1990, Kolva et al., 2014, Kolva et al., 2018, Lepping et al., 2015, Okonkwo et al., 2008, Raymont et al., 2004, Sessums et al., 2011).

Based on an extensive and comprehensive literature review of previously published research articles on this topic, no such comparable research study was obtainable involving the prevalence of medical decision-making mental capacity or incapacity in both a medical and surgical inpatient population and with the accompanying extensive variety of medical or surgical diagnoses that is present in this research study. The inclusion of both medical and surgical hospital inpatients in this research study was again intentional, as our foremost study aim was to estimate and elucidate the cross-sectional prevalence of mental incapacity in both medical and surgical hospital inpatients in a general urban and rural hospital population in Ireland and furthermore, to use this information in relation to the essential planning and provision of the implementation of the Assisted Decision-Making (Capacity) Act 2015 (Government, 2015).

Supplementary information was also collected and documented in relation to the primary, secondary and tertiary body system affected by the current illness or disorder for each individual involved in the research study. This information was collected and documented on the patient demographic data sheet form (Appendix B). Results signified that illnesses or disorders affecting the respiratory and gastrointestinal systems were the most frequently documented among this entire inpatient study population, with 38.0% (n=114) of all medical or surgical general hospital inpatients admitted with either a respiratory or gastrointestinal illness or disorder. Disorders of the neurological system accounted for 13.0% (n=39) of those medical or surgical inpatients included in this research study and a further 23.4% (n=70) of study participants were admitted with either

infectious disease or musculoskeletal disorders. The remaining body systems affected by study participants included the cardiovascular system (10.7% of participants; n=32), renal system (6.3% of participants; n=19) and other systems (8.7% of participants; n=26).

Raymont et al. similarly documented the body system or systems affected by the 159 interviewed study participants in their research study, the results of which were comparable to the results seen in this research study (Raymont et al., 2004). Disorders of the respiratory system were noted in 31.4% (n=50) of study participants, illnesses related to the gastrointestinal system were documented in 11.3% (n=18) of study participants, neurological disorders were seen in 21.4% (n=34) and a further 20.1% (n=32) of individuals were noted to have an infectious disease disorder or illness. Similarly, Bilanakis and colleagues presented the reason for hospitalization in the outcomes of their research study, the results of which outlined that 24.4% of study individuals were admitted with a neurological disorder, 21.8% with a renal diagnosis and 16.7% of study participants were admitted with a documented digestive or gastrointestinal disorder (Bilanakis et al., 2014).

In this research study figures in relation to the number of diagnoses associated with each individual study participant were also documented and indicated that slightly over half of all individuals that participated in the research study were admitted with one illness or disorder (52.7%; n=158), a further 39.3% (n=118) were admitted with two complaints and the remaining study participants (8.0%; n=24) had three or more documented diagnoses or illnesses on admission to hospital. In a comparable research study, Raymont and colleagues documented the concurrent number of diagnoses in their study participants (Raymont et al., 2004). Results denoted that 43.0% of study individuals

had one medical diagnosis, 27.1% had two documented medical diagnoses and the remaining 29.9% had three or more concurrent diagnoses documented.

4.2 Instruments used for capacity assessment

For this research study, mental capacity for medical treatment decisions was assessed and evaluated using two capacity assessment tools. As outlined above in greater detail, firstly the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) was utilised (Grisso and Appelbaum, 1998). This examination tool is regarded to be the most widely accepted and used tool currently available for mental capacity assessment and is founded on the core legal fundamental capabilities required for determination of mental capacity in an individual, including understanding, appreciation, reasoning and expressing a choice (Berghmans et al., 2004, Breden and Vollmann, 2004, Grisso and Appelbaum, 1995, Grisso et al., 1997, Karel et al., 2010, Moye et al., 2006, Palmer and Harmell, 2016, Racine and Billick, 2012, Raymont, 2002, Sturman, 2005, Elzakkars et al., 2018).

In clinical practice, the author found the employment and application of the MacCAT-T very straightforward during clinical use, unproblematic in the capacity assessment of study participants and chronological in the assessment and evaluation of mental capacity for medical treatment decisions, from an individual's understanding of their diagnosis, treatment options, associated risks and benefits, appreciation of their disorder and the proposed treatments, their reasoning throughout the decision-making process, including consequential and comparative reasoning, generating consequences,

the logical consistency of their choice and ultimately the procedure of making and expressing a final medical treatment decision.

The MacCAT-T assessment tool also includes a final summary rating scale on the final page of the assessment, summarising all of the individual's outcomes under the four mental capacity headings of understanding, appreciation, reasoning and expressing a choice. The total scores of the summary rating scale range from 0 (minimum score) to 20 (maximum score), with higher scores indicating greater mental capacity for medical treatment decisions of the individual. This overall summary rating scale finalises and outlines the mental capacity assessment results for each individual study participant on the four subscales of mental capacity determination outlined in the MacCAT-T, understanding (total score out of 6), appreciation (total score out of 4), reasoning (total score out of 8) and expressing a choice (total score out of 2).

Additional statistical evaluation for decision-making capacity as assessed by the four scales of the MacCAT-T was performed, by generating further subtotal MacCAT-T scores for each of the four main scales of understanding, appreciation, reasoning and expressing a choice. Each of these MacCAT-T subscale scores ranged from 0 to 2, where a score of 0 indicated that the patient lacked that ability to perform this element of the assessment, a score of 1 indicated that the patient had partial ability to perform this element of the assessment and a score of 2 indicated that the patient had full ability to perform this element of the assessment. Production of these MacCAT-T subscales and thus, further subtotal MacCAT-T scores for each individual study participant revealed a second and subsequent overall score of mental capacity for treatment decisions for each individual patient, ranging from 0 to 8. A MacCAT-T total subscale score of 8 indicated full mental capacity for medical treatment decisions in a study participant, a score of 0

indicated a lack of mental capacity for medical treatment decisions in a study participant and all scores between 0 and 8 indicated partial mental capacity for medical treatment decisions in a study participant. This additional analysis revealed that over one quarter of all study participants (27.7%; n=83) lacked mental capacity for hospital treatment decisions, 1.7% (n=5) had partial mental capacity and 70.7% (n=212) had full mental capacity.

In this study patient cohort population (n=300), mental capacity for medical treatment decisions was further assessed using a second instrument for the examination and evaluation of medical decision-making capacity, the criteria to assess mental capacity as outlined and defined in the as yet to be implemented new capacity legislation in Ireland, the Assisted Decision-Making (Capacity) Act 2015 (Government, 2015). This Act delineates that a person lacks capacity to make a decision if he or she is unable (a) to understand the information relevant to the decision; (b) to retain that information; (c) to use or weigh up that information as part of the process of making the decision; or (d) to communicate his or her decision (whether by talking, writing, using sign language, assisted technology, or any other means) or, if the implementation of the decision requires the act of a third party, to communicate by any means with that third party. Each of these four items was rated in a binary fashion (yes/no) and therefore if a study participant received a 'no' on one or more of these four criteria, this patient was then therefore deemed to lack mental capacity for treatment decisions according to the Assisted Decision-Making (Capacity) Act 2015.

As the Assisted Decision-Making (Capacity) Act 2015 is exclusive to the Republic of Ireland and essentially has not yet been enacted by the Irish Government, there are no existing research articles, published reports or available specific patient

demographics in relation to this capacity legislation and for comparison to this research study and these explicit patient results. Moreover, this research study is the first significant study of mental capacity and incapacity in a general hospital inpatient population in the Republic of Ireland and it would be the authors aim to continue to assess this subject matter in the Irish general hospital inpatient population and especially in conjunction with the implementation of the Assisted Decision-Making (Capacity) Act 2015 in the coming years.

Additionally, the results attained in this research study are expected to be highly generalisable from an international point of view on mental capacity and incapacity for medical treatment decisions in a general hospital population, given the purposeful inclusion of all medical and surgical inpatients, all wards of two general hospitals, encompassing both an urban and rural catchment area base and the use of not only the Irish capacity legislative criteria to define mental capacity but also the employment of the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) in the assessment and evaluation of medical decision-making capacity in all research study participants. This assessment tool is regarded to be the most widely used and accepted international assessment tool for the evaluation of mental capacity for medical treatment decisions and therefore outcomes from the MacCAT-T are not dependent on local factors such as national capacity legislation. This generalisability is supported by the consistency of our findings with the broader, albeit limited, literature to date on this subject matter of decision-making capacity and consent in general hospital inpatients (Bilanakis et al., 2014, Lepping et al., 2015, Owen et al., 2013, Raymont et al., 2004, Sessums et al., 2011, Elzakkars et al., 2018).

4.3 Mental incapacity as by the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) and the Assisted Decision-Making (Capacity) Act 2015

As explicitly detailed above, mental capacity and incapacity for medical treatment decisions was assessed in the study cohort of participants using two assessment tools, the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) and the criteria as outlined in the Assisted Decision-Making (Capacity) Act 2015. Both instruments were employed jointly during capacity evaluations of all 300 medical and surgical inpatients involved in the research study. The MacCAT-T delineates results of mental capacity on a continuous and non-binary scale, utilising the four core fundamental considerations for mental capacity assessment, understanding, appreciation, reasoning and expressing a choice. The criteria as defined by the as yet to be implemented 2015 Irish legislation do provide a binary outcome of mental capacity, as an individual must retain the ability of all four defined criteria in order to be deemed to have decision-making mental capacity. Retained mental capacity for medical treatment decisions was found in 217 (72.3%) of study participants, with the remaining 83 (27.7%) study participants lacking mental capacity for medical treatment decisions.

The prevalence of mental incapacity for medical treatment decisions in this Irish cohort of inpatients is marginally lower than the previously published study by Raymont and colleagues (Raymont et al., 2004) but as formerly stated, the total number of study participants in this research project did not merely comprise of acute medical inpatients but included all eligible medical and surgical inpatients from all wards of the hospital including the Intensive Care Unit and therefore included an extensive variety of medical

and surgical diagnoses and a diverse spectrum of the level of patient illness from the negligible to the most severely unwell.

With regards to the MacCAT-T, total scores for an individual's mental capacity assessment were initially calculated using the summary rating scale on the final page of the Mac CAT-T capacity assessment tool, with scores ranging from 0 to 20 and again, with the higher the overall score, the greater the mental capacity of an individual. For the complete study cohort (n=300), the mean MacCAT-T score was 14.80 and the associated standard deviation of 8.40. Results for each of the four scales of the MacCAT-T were generally consistent across the four essential areas of mental capacity, understanding, appreciation, reasoning and expressing a choice. Mean MacCAT-T scores were also documented in previously published research articles on this subject matter. Raymont and colleagues performed the MacCAT-T utilising only the first three core scales, understanding, appreciation and reasoning, and reported a statistically significant difference between the mean MacCAT-T scores of study participants who had mental capacity (11.7, standard deviation 3.3) as compared to those that did not (4.9, standard deviation 3.6) ($p < 0.0001$) (Raymont et al., 2004).

As outlined in previous similar research studies documenting mental capacity as per the MacCAT-T, further subtotal subscale MacCAT-T scores were calculated and obtained for each study participant (Kolva et al., 2014). In this research study, this calculation was also performed and the subsequent MacCAT-T subscale and subtotal scores of the overall mental capacity of the total cohort revealed that over one quarter of study participants (27.7%; n=83) lacked mental capacity for hospital treatment decisions, 1.7% (n=5) of study participants had partial mental capacity for hospital treatment

decisions and 70.7 % (n=212) of study participants had full mental capacity for hospital treatment decisions.

With regards to the understanding subscale of the MacCAT-T, 71.3% (n=214) of study participants scored 2, indicating full mental capacity in this subscale for medical treatment decisions, 2.0% (n=6) of study participants scored 1, indicating partial mental capacity in this subscale for medical treatment decisions and 26.7% (n=80) of study participants scored 0, indicating a lack of mental capacity in this subscale for medical treatment decisions. With regards to the appreciation subscale of the MacCAT-T, 75.3% (n=226) of study participants scored 2, indicating full mental capacity in this subscale for medical treatment decisions, 2.3% (n=7) of study participants scored 1, indicating partial mental capacity in this subscale for medical treatment decisions and 22.3% (n=67) of study participants scored 0, indicating a lack of mental capacity in this subscale for medical treatment decisions. With regards to the reasoning subscale of the MacCAT-T, 71.0% (n=213) of study participants scored 2, indicating full mental capacity in this subscale for medical treatment decisions, 1.3% (n=4) of study participants scored 1, indicating partial mental capacity in this subscale for medical treatment decisions and 27.7% (n=83) of study participants scored 0, indicating a lack of mental capacity in this subscale for medical treatment decisions. In conclusion, with regards to the expressing a choice subscale of the MacCAT-T, 73.3% (n=220) of study participants scored 2, indicating full mental capacity in this subscale for medical treatment decisions, 3.3% (n=10) of study participants scored 1, indicating partial mental capacity in this subscale for medical treatment decisions and 23.3% (n=70) of study participants scored 0, indicating a lack of mental capacity in this subscale for medical treatment decisions. In a similarly designed published research article, where subscale ratings of MacCAT-T

capacity assessments were produced, Kolva et al. assessed mental capacity for decision-making at the end of life and reported that 25.0% of participants had impairment in the understanding subscale, 20.8% of participants had impairment in the appreciation subscale, 62.5% had impairment in the reasoning subscale and 8.3% of participants had impairment for expressing a choice (Kolva et al., 2014).

Furthermore, in our research study, less than acceptable mental capacity for medical decision-making mental capacity was frequently observed in the understanding (28.7%), appreciation (24.6%), reasoning (29.0%) and expressing a choice (26.6%) subscales of the MacCAT-T. Kolva and colleagues similarly assessed decision-making capacity in a further cohort of terminally ill patients and revealed that full or partial impairment on the understanding (44.2%), appreciation (49.0%) and reasoning (84.4%) subscales of the MacCAT-T was particularly common in this specific group of hospital inpatients (Kolva et al., 2018). One could hypothesis that the frequencies observed in this research study were marginally lower when compared to internationally published research due to the variable inpatient cohort population and the assortment of medical and surgical diagnoses present in all wards of the two general hospitals in question. It must also be noted that the total study participant number involved in the research articles published by Kolva and colleagues were considerably smaller (n=25) (Kolva et al., 2014); (n=50) (Kolva et al., 2018)) when compared to our total study participant number and therefore direct comparison of overall results is to be considered and viewed with this in mind.

With regards to the second instrument used for mental capacity assessment in this research study, 83 medical and surgical hospital inpatients (27.7%) lacked mental capacity for medical treatment decisions under the criteria as defined by the Assisted

Decision-Making (Capacity) Act 2015. This legislation delineates that a person lacks mental capacity to make a decision if he or she is unable, (a) to understand the information relevant to the decision; (b) to retain that information; (c) to use or weigh up that information as part of the process of making the decision; or (d) to communicate his or her decision (whether by talking, writing, using sign language, assisted technology, or any other means), or if the implementation of the decision requires the act of a third party, to communicate by any means with that third party. A majority of these individuals (75.0%) met all four criteria for mental incapacity as per the 2015 Act and therefore were unable to understand the relevant information in order to make a treatment decision, retain this information for long enough to make a decision, weigh up all necessary information and ultimately communicate an informed decision. Furthermore, ten hospital inpatients (11.9%) met three of the criteria for mental incapacity as per the 2015 Act, seven hospital inpatients (8.3%) met two of the criteria for mental incapacity as per the 2015 Act and four hospital inpatients (4.8%) met one of the criteria for mental incapacity as per the 2015 Act.

In relation to the criteria for mental capacity as outlined in the Assisted Decision-Making (Capacity) Act 2015, of the total cohort of 300 patients sampled, 22.7% of study participants were unable to understand the information relevant to the decision, 27.0% of study participants were unable to retain this information for long enough to make a decision; 26.7% of study participants were unable to weigh up this information; and 23.7% of study participants were unable to communicate their decision. As outlined above, as the Assisted Decision-Making (Capacity) Act 2015 has not yet been enacted or inaugurated by the Irish Government, there are no existing research articles, published reports or available specific patient demographics in relation to this capacity legislation,

for comparison to the results exposed from this research study. Once this new capacity legislation is implemented and becomes commonplace in Irish clinical and legal contexts, it would be the authors aim to continue to assess and evaluate mental capacity for medical treatment decisions, not only in the general hospital inpatient setting, but also in the nursing home population and community treatment settings and ultimately to continue to build upon the national and international database on this complex and multifaceted aspect of patient healthcare.

Comparison analysis between the mental capacity assessment tools of the MacArthur Competence Assessment Tool for Treatment and the Assisted Decision-Making (Capacity) Act 2015 indicated that the mean MacCAT-T score among patients who had mental capacity according to the Assisted Decision-Making (Capacity) Act 2015 (19.89, standard deviation 0.60) was significantly higher than that for those who lacked mental capacity (1.69, standard deviation 3.47). Likewise, when additional statistical analysis was performed, inpatients who had mental capacity according to the Assisted Decision-Making (Capacity) Act 2015 scored significantly higher than those who lacked it on all scales of the MacCAT-T. This overall outcome is not unanticipated given the American legal basis of mental capacity and consent that the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) was initially founded and developed upon, including the ability to understand relevant information regarding a concrete decision of treatment, the ability to manipulate relevant information rationally so as to make comparisons and weigh options, the ability to appreciate the significance of the given information about the illness and possible treatment for one's own situation and finally to express a choice (Grisso and Appelbaum, 1998).

4.4 Statistical analysis of patient demographics in relation to mental capacity

As outlined in detail above in the results chapter, supplementary statistical analysis was performed on the dependent and independent variables of the specific patient demographic data. Using the statistical package, linear regression analysis of the overall mental capacity score obtained as per the MacCAT-T assessment was conducted, with mental capacity outlined as the dependent variable and the accompanying patient demographics of gender, age, marital status, employment status, ethnicity, location of the hospital where the capacity assessment took place, primary treating team, primary body system affected by the current illness and number of medical or surgical diagnoses, outlined as the independent variables. This further statistical examination revealed a number of statistically significant results between the variables in question, delineating that greater age of study participants, having never married, not working outside of the home, being a medical rather than surgical inpatient and having a greater number of medical or surgical diagnoses were significantly associated with mental capacity. The author has hypothesised that the increased associations outlined in this statistical analysis were somewhat expected, with those older and more infirm patients more likely to present with mental incapacity for medical treatment decisions. Additionally, medical rather than surgical patients may be more likely to present with impaired mental capacity for medical treatment decision due to the more acute nature of medical admissions and the minimal rate of elective admissions usually seen on medical inpatient wards. One could further postulate that the association between mental incapacity and those medical or surgical inpatients who had never married may be related in part to the documented positive health benefits seen in a higher percentage of married compared to single or

divorced men (Watch, 2010). However additional research studies are needed to replicate and elucidate these findings in greater detail. Furthermore, no statistically significant relationships were revealed between mental incapacity and a patient's gender, ethnicity, location of the hospital where the capacity assessment took place, or the body system affected by the current illness.

These results have several parallels to previously published literature on the subject of mental capacity and incapacity in general hospital inpatients and the associated patient demographic variables, with previous associations discovered between mental incapacity and increasing age of patients (Raymont et al., 2004, Bilanakis et al., 2014), the presence of neurological disorders (Bilanakis et al., 2014, Lepping et al., 2015), cognitive impairment (Raymont et al., 2004, Sessums et al., 2011, Lepping et al., 2015, Fitten and Waite, 1990), a diagnosis of a terminal illness (Kolva et al., 2018), presence of a learning disability (Lepping et al., 2015), and an associated relative who attributed that the patient likely lacked mental capacity for medical treatment decisions (Raymont et al., 2004). Patient demographics not previously deemed to be associated with lack of mental capacity for medical treatment decisions in hospital inpatients include gender (Raymont et al., 2004, Bilanakis et al., 2014), level of education (Raymont et al., 2004, Bilanakis et al., 2014), marital status of the individual (Raymont et al., 2004, Bilanakis et al., 2014) or residential status of the patient (Bilanakis et al., 2014). Although the above studies have several similarities to our study results in relation to a number of associations between a lack of mental capacity for medical treatment decisions in general hospital inpatients, all referenced studies had distinctive study designs and key outcomes, therefore not permitting direct and absolute comparison with this research study. Due to the limited and restricted repertoire of published research articles on this subject matter on mental

capacity and the ability to consent, continued attention and awareness should be given to sustained research in this area of patient healthcare.

Further statistical analysis with the statistical package was performed for this total cohort of medical and surgical hospital inpatients using a binary logistic regression model of analysis, with mental capacity for medical treatment decisions as per the Assisted Decision-Making (Capacity) Act 2015 as the dependent variable and associated independent variables of gender, age, marital status, employment status, ethnicity, location of the hospital where the capacity assessment took place, primary treating team, primary body system affected by the current illness and number of medical or surgical diagnoses. Results further indicated that hospital inpatient's who lacked mental capacity for medical treatment decisions under the new capacity legislation were older patients, they were more likely to have never married, less likely to be employed outside of the home, more likely to be a medical rather than surgical inpatients and to have multiple medical or surgical illnesses or diagnoses. Comparable to the linear regression analysis of mental capacity scores as detailed by the MacCAT-T, this binary logistic regression model of analysis of study participants' mental capacity status as outlined by the criteria defined by the Assisted Decision-Making (Capacity) Act 2015 and the outstanding demographic independent variables of a patient's gender, ethnicity, location of the hospital where the capacity assessment took place and the body system of affected by the current illness, revealed no statistically significant associations or relationships.

4.5 Strengths and limitations of the research study

This research study has a number of strengths. The chief strength of this research project is that this study is the first examination of the prevalence of mental capacity and incapacity for medical treatment decisions in hospitalised medical and surgical inpatients in the Republic of Ireland. Additionally, this cross-sectional, observational study blueprint aimed to be as inclusive as possible with the design of the research study, incorporated a wide variety of hospital inpatients from both an urban and rural general hospital setting, from both medical and surgical inpatient wards, including the Intensive Care Unit of both hospital settings and only excluding the Accident and Emergency and Obstetrics and Gynaecology departments of both hospitals, for reasons as outlined above in the methods chapter.

The sample size included in this research study (n=300) is also a significant and unquestionable strength of this project and is comparable in size with the leading published studies on this topic of mental capacity and incapacity and the ability of a patient to consent to medical treatment decisions in the general hospital setting (Bilanakis et al., 2014, Owen et al., 2013, Raymont et al., 2004). This study also aimed to convey, as accurately as was possible, the point prevalence of mental incapacity in a general hospital population and setting by implementing a minimal list of exclusion criteria for study participants and most importantly, not excluding any individuals merely based on their primary treating team or physician, severity of illness, cognitive status or objective level of consciousness.

This research study also utilised Ireland's newly appraised but as yet unimplemented capacity legislation, the Assisted Decision-Making (Capacity) Act 2015 (Government, 2015). This innovative and pioneering piece of capacity legislation will replace the current outdated Lunacy Regulation (Ireland) Act 1871 and the associated

Ward of Court system and once inaugurated, will demonstrate a substantial and significant advancement in Irish national capacity legislation, placing the will and preferences of the person at the core of decision-making. This assessment tool was the second instrument employed to assess and evaluate an individual's mental capacity status and delineates that a person lacks capacity to make a decision if he or she is unable (a) to understand the information relevant to the decision; (b) to retain that information; (c) to use or weigh up that information as part of the process of making the decision; or (d) to communicate his or her decision (whether by talking, writing, using sign language, assisted technology, or any other means) or, if the implementation of the decision requires the act of a third party, to communicate by any means with that third party.

Each of these four items was rated in a binary fashion (yes/no) and therefore if a study participant received a 'no' on one or more of these four defined criteria, this patient was then deemed to lack mental capacity for treatment decisions according to the Assisted Decision-Making (Capacity) Act 2015. As the Assisted Decision-Making (Capacity) Act 2015 is exclusive to the Republic of Ireland and essentially has not yet been enacted by the Irish Government, there are no existing research articles, published reports or available specific patient demographics in relation to this capacity legislation, for comparison to this research study and the accompanying outcomes and results.

Moreover, this research study is the first significant study of mental capacity and incapacity in a general hospital medical and surgical inpatient population in the Republic of Ireland and it would be the authors aim to continue to assess this subject matter in the Irish hospital inpatient population and particularly in conjunction with the implementation of the Assisted Decision-Making (Capacity) Act 2015 in the coming years. Additionally, the results reported in this research study are anticipated to be highly

generalisable from an international point of view on mental capacity and incapacity for medical treatment decisions in a general hospital population, given the inclusion of all medical and surgical inpatients, all wards of two general hospitals, encompassing both an urban and rural catchment area base and the use of not only the Irish capacity legislative criteria to define mental capacity but also the employment of the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) in the assessment and evaluation of medical decision-making capacity in all study participants. This assessment tool is appreciated to be the most widely accepted and used assessment tool for the evaluation of mental capacity and consent for medical treatment decisions in the clinical setting and therefore, outcomes from the MacCAT-T are not dependent on local factors such as national capacity legislation (Elzakkers et al., 2018). This generalisability is supported by the consistency of our findings with the broader, albeit limited, literature to date on this subject matter of decision-making capacity and consent in general hospital medical and surgical inpatients (Bilanakis et al., 2014, Lepping et al., 2015, Owen et al., 2013, Raymont et al., 2004, Sessums et al., 2011).

There are a number of limitations associated with our study. Firstly, as delineated above, this research study was designed as a cross-sectional, observational study to evaluate and assess the point prevalence of mental capacity and incapacity for medical treatment decisions in a medical and surgical inpatient population in both an urban and rural general hospital setting in the Republic of Ireland. Therefore, the results described above do not take into account a number of key considerations essential with regards to the determination of patient capacity to consent to medical treatment, including any changes or alterations in a patient's capacity over time and the customary clinical practice of a treating physician to undertake repeated mental capacity assessments and ultimately

to defer a formal and conclusive assessment and determination of patient capacity for medical treatment decisions unless in an emergent situation. This research design employing an external research assistant and not the treating clinical physician in the examination and assessment of mental capacity for medical treatment decisions is also limited with regards to the lack of a developed relationship and affiliation between patient and assessor, the time limited approach to mental capacity assessment, the evaluation and assessment of decision-making capacity utilising the person-specific conditions for hospital admission and ultimately the lack of appreciation of the essential dyad of the physician-patient interaction with regards to mutual understanding, trust, collaboration, communication and choice in determining mental capacity for medical treatment decisions in the hospital setting (Supady et al., 2011, Hermann et al., 2017, Amalraj et al., 2009). It would, therefore, be highly valuable for future research studies to perform repeated assessments and evaluations of an individuals' mental capacity for medical treatment decisions in this hospital inpatient population, to compare repeated clinical mental capacity assessment between research assistants and those of the treating physician and ultimately, to continue to build upon the existing national and international database in relation to this subject matter of mental capacity and the ability of a patient to consent.

Additionally, the primary treating clinical team should endeavour to optimise and enhance a patient's decision-making capability as much as is possible prior to a final conclusion of mental incapacity. Such procedures ought to include the treatment of any remediable conditions, consideration and assessment for any confounding mental health difficulties, optimising a patient's cognitive functions and communication abilities, lessening the reliance on a patient's verbal and memory capabilities during the mental

capacity assessment with the use of visual aids, ensuring that all the necessary information required to make the medical decision is provided in a clear and concise manner and ultimately, further assessment and evaluation of the patient's decision-making ability following such constructive interventions (Sessums et al., 2011, Murphy et al., 2018, Raymont et al., 2004).

Furthermore, owing to Ireland's presumption of decision-making mental capacity and, in accordance with our study consent procedures, a second and/or follow-up assessment of a study participant's mental capacity for medical treatment decisions was not performed in this research study, but again, this would be a very useful consideration and inclusion in future research projects, as the results and outcomes may very likely differ from the sole assessment of mental capacity to make medical treatment decisions as was assessed in this research study.

During the study design process, it was aimed to minimize selection bias as much as was feasible by including two general hospital settings, one urban based and one rurally based, by developing a comprehensive study participant consent procedure, by incorporating medical and surgical hospital inpatients from all hospital wards and using a random and unsystematic approach to patient selection on each ward of both hospitals. Nonetheless, residual patient selection bias in either direction, may still remain, as a result of unknown factors.

Additionally, the use of one individual and rater for all inpatient mental capacity assessments may also have introduced and presented bias but likewise, this process does have the added value of assessment consistency and was therefore intended to duplicate and correspond to the realities of day to day clinical practice and the associated mental capacity assessment of patients by their own treating physician. Another potential

limitation for this research study was the use of the four scales of the MacCAT-T to generate further MacCAT-T subscales and an associated a binary outcome of mental capacity for medical treatment decisions in study participants. As described above in greater detail, although this was based on a previous similar published research study (Kolva et al., 2014), further evaluation into the use of the MacCAT-T in this manner would be valuable and would further characterize this use in terms of its validity and reliability in clinical and research practice.

Chapter 5: Conclusion

5.1 Summary

Mental capacity both merits and requires substantial consideration and attention in present-day clinical practice, research and legislation. This is the first research study in the Republic of Ireland to evaluate the prevalence of mental capacity in general medical and surgical hospital inpatients, incorporating a considerable patient population (n=300) and including individuals from both an urban and rural catchment area in Ireland. The significant rate of mental incapacity in this cohort of individuals (27.7% of all study participants; n=83) indicates the frequency of this complex issue and furthermore, underscores the importance of commencing Ireland's new mental capacity legislation, the Assisted Decision-Making (Capacity) Act 2015, which has been passed by Parliament and signed into law by President Michael D. Higgins, but to date awaits inauguration and implementation.

Once executed and effected, this Act will provide imperative assistance and guidance to both healthcare and judicial staff in relation to all facets of the assessment, evaluation, determination and management of an individual's mental capacity and capability to consent. As the rate of mental incapacity among general hospital inpatients in this Irish research study is essentially consistent with those reported in other international jurisdictions, there is undoubtedly a need to pay specific attention to this fundamental and imperative aspect of patient care, by promoting advance healthcare planning, by also devising national policies and protocols to be implemented when an individual lacks or may shortly mental capacity for medical treatment decisions and

ultimately, to safeguard as much as is achievable, an individual's right to autonomy during the inclusive decision-making process.

5.2 Conclusions from this study

As outlined and detailed above, this is the first research study in Ireland to assess the prevalence of mental incapacity for medical treatment decisions in a general hospital inpatient population. This study and the associated outcomes are particularly significant and noteworthy for the Republic of Ireland, due to the recent completion and optimistically imminent introduction of Ireland's new mental capacity legislation, the Assisted Decision-Making (Capacity) Act 2015, which when employed will replace the current antiquated Irish mental capacity legislation provided by the Lunacy Regulation (Ireland) Act 1871 and furthermore, will ultimately provide much needed regulation and instruction to all healthcare and judicial staff in relation to the management and treatment of individuals without mental capacity to consent (Government, 2015).

This study is also a research project that assessed and evaluated the mental capacity for medical treatment decisions of 300 randomly selected general medical and surgical hospital inpatients from both the urban and rural catchment areas of Dublin and Portlaoise, without enforcement of many limitations on the patient selection and study recruitment process and thereby, providing extremely essential and critical information on this commonly circumvented cohort of hospital inpatients. As delineated above, much of the current published material on the mental capacity of general hospital inpatients to consent to medical treatment is so often restricted to specific cohorts of inpatients, most frequently excluding those individuals with an expectation of deficient mental capacity for medical treatment decisions, thereby limiting the published availability of comparable patient cohorts and research results (Bilanakis et al., 2014, Raymont et al., 2004). By initially embracing all potential general hospital medical and surgical inpatients for

possible inclusion in this research study during the preliminary recruitment process, this research project aimed to provide an all-inclusive account of the overall point prevalence of mental incapacity for medical treatment decisions in a general hospital inpatient population, an outcome that is therefore expected to be particularly generalisable to any similar cohort of hospital inpatients in a national or international general hospital setting.

As summarised above, mental capacity for medical treatment decisions was assessed and evaluated in this inpatient population using two individual tools for capacity appraisal, firstly the MacArthur Competence Assessment Tool for Treatment (MacCAT-T), a tool incorporating the four fundamental legal capabilities for decision-making evaluation and additionally, a tool considered internationally to be the most widely accepted tool for clinical use of mental capacity determination (Berghmans et al., 2004, Breden and Vollmann, 2004, Grisso and Appelbaum, 1995, Grisso and Appelbaum, 1998, Grisso et al., 1997, Jones and Holden, 2004, Moye et al., 2006, Palmer and Harmell, 2016, Racine and Billick, 2012, Raymont, 2002, Sturman, 2005, Elzakkars et al., 2018).

The second tool utilised in this research project was the criteria for mental capacity as outlined and defined in Ireland's new capacity legislation, the Assisted Decision-Making (Capacity) Act 2015 (Government, 2015), indicating the criteria for mental capacity through the patient's ability to understand, retain, weigh up and communicate the relevant information necessary for medical treatment decision-making (Government, 2015). Comparison of the mental capacity scores of study individuals on all scales of the MacCAT-T (understanding, appreciation, reasoning and expressing a choice) and additionally, the patient outcomes of mental capacity or incapacity as assessed utilising the criteria outlined in the Assisted Decision-Making (Capacity) Act

2015 through additional statistical analysis revealed that patients who had mental capacity for medical treatment decisions according to the criteria as outlined in the Assisted Decision-Making (Capacity) Act 2015 scored significantly higher than those who lacked mental capacity for medical treatment decisions on all scales of the MacCAT-T, thus indicating a statistically significant correlation between the determinants of mental capacity as outlined by the MacCAT-T and the Assisted Decision-Making (Capacity) Act 2015.

The rate of mental incapacity for medical treatment decisions in this patient population was found to be 27.7% (n=83), indicating that at any point in time, over one quarter of all general hospital admitted medical and surgical inpatients may lack mental capacity for the medical decision-making process. When considering the total number of daily medical or surgical admissions in Ireland, the total figure of 1,704,452 discharges by acute public hospitals in 2016 and the further detail that 36.2% of all discharges that year was in the 65 years and over age group, the gravity and magnitude of this issue is extremely significant (Office, 2017).

The specific demographic patient data from the random selection of 300 study participants revealed a wide variety of specific patient details, with approximately two-thirds of the population under the care of a medical physician (62.3%; n=187) and the remaining one-third under the care of a surgeon (37.7%; n=113). Correspondingly, illnesses or disorders affecting the respiratory and gastrointestinal systems (38.0%; n=114) were found to be the most common bodily systems implicated in the reason for hospitalisation, followed by neurological disorders (13.0%; n=39), infectious diseases (11.7%; n=35), musculoskeletal disorders (11.7%; n=35), cardiovascular disorders (10.7%; n=32), renal disorders (6.3%; n=19) and others (8.7%; n=26). Additionally, half of all

study participants were admitted to hospital with one documented illness or disorder (52.7%; n=158), 39.3% (n=118) were admitted to hospital with two illnesses or disorders and the remaining 8.0% (n=24) had evidence of three or more illnesses or disorders documented on hospital admission correspondence.

Linear and binary regression analyses of the overall study participant mental capacity score and the associated independent patient demographic details revealed that greater age, having never married, not working outside of the home, being a medical rather than a surgical inpatient and having a greater number of medical or surgical diagnoses were significantly associated with mental incapacity for medical treatment decisions in this cohort of individuals. These outcomes and conclusions are particularly substantial and significant in terms of the development of specific patient demographic data relating to those individual hospital inpatients most likely and probable to lack mental capacity for medical treatment decisions in the general hospital setting and will likely be very advantageous to the future delivery of training and education to hospital-based physicians and associated allied and multidisciplinary team members. Likewise, the negative statistically significant relationship outlined in our cohort of study participants are also important to identify and acknowledge, with this research study indicating a lack of statistical significant between the overall mental capacity score of an individual and their gender, ethnicity, location of the hospital where the capacity assessment took place or the body system affected by the current illness or disorder.

Therefore, it is now imperative and essential that the Assisted Decision-Making (Capacity) Act 2015 is implemented and introduced in the Republic of Ireland in order to provide legislative safeguarding and therapeutic protection to all those individual's currently lacking or those potentially lacking mental capacity for medical treatment

decisions in all healthcare settings in Ireland, not only the general hospital inpatient setting but also all community based and nursing home residents.

5.3 Clinical recommendations arising from this work

Arising from this research study, there are a number of key clinical recommendations to summarise. Firstly, it is essential that all physicians and allied healthcare workers should be aware that mental incapacity for medical and surgical treatment decisions is exceedingly common in all general hospital and healthcare settings and is especially correlated with the older age of the patient, unmarried status, medical as opposed to surgical hospital inpatients, those individuals who have not worked outside of the home and those inpatients who have a greater number of medical or surgical diagnoses. Therefore, provisions to assist those individuals lacking in mental capacity for medical treatment decisions is imperative, to attempt to optimise and augment an individual's mental capacity status as much as is feasible through the use of advocates. Assistance and support to all such individuals currently lacking mental capacity for medical treatment decisions should be concentrated and focused on these specific groups of vulnerable and susceptible individuals in the first instance, as these general hospital inpatients appear to have the greatest need for such assistance based on the results illustrated in this research study.

Secondly, the close relationship identified in this analysis of patient demographics between mental capacity for medical treatment decisions as rated using Ireland's new Assisted Decision-Making (Capacity) Act 2015 and all four scales of the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) suggests that Ireland's new

legal criteria for mental capacity are a valid and pragmatic way of assessing and evaluating mental capacity for treatment decisions in day-to-day clinical practice. The MacCAT-T provides and delivers a more nuanced examination of an individual's mental capacity status, which will unquestionably prove very useful in certain clinical scenarios and circumstances, but the legal criteria as outlined and defined in the Assisted Decision-Making (Capacity) Act 2015 have the distinct advantages and benefits of concision and additionally, providing a binary outcome indicating whether the individual in question has mental capacity for decision-making or not.

Thirdly, the elevated rate of mental incapacity as outlined in this research study (27.7%; n=83) identifies the significance and prominence of this complex issue and therefore for the need to commence Ireland's new Assisted Decision-Making (Capacity) Act 2015 into clinical and legal practice as soon as is feasible. The results also highlight the complex and multifaceted subject-matter of mental capacity and the ability to consent and additionally the necessary skill and expertise employed by physicians on a daily basis during the physician-patient interaction. Physicians should continue to be supported and assisted in this complicated process and it is also imperative to include both physicians and patients in the multidisciplinary discussions regarding the resourcing and planning for implementation of the Assisted Decision-Making (Capacity) Act 2015. This legislation has been passed by the Irish Government and signed into Irish law by the President of the Republic of Ireland but to date has not yet been commenced into practice. Once commenced and implemented, this capacity legislation will also provide and deliver new assistance and supports to enhance the mental capacity of those individuals in need of such support and guidance, such as decision-making assistants and co-decision-makers.

Preparation and provision for the commencement of this new legislation is underway at present in Ireland and it is the author's hope that this legislation is inaugurated shortly. The results of this study also highlights the need for employment of the Assisted Decision-Making (Capacity) Act 2015 to proceed apace by emphasising the high prevalence of mental incapacity for medical treatment decisions among medical and surgical general hospital inpatients, therefore validating the definition of mental incapacity in the Act and consequently identifying those individuals particularly likely to require the imperative supports to be introduced with the implementation of the new mental capacity legislation.

5.4 Future directions of this work

The results of this research study have indicated that mental capacity for medical treatment decisions in the general hospital inpatient population both warrants and necessitates additional consideration and attention in clinical practice, research and legislation. As outlined previously, there are a number of limitations to this study, most notably the cross-sectional research study design and the associated point prevalence result of mental incapacity for medical treatment decisions in this cohort of patients. This result therefore does not take into consideration any potential changes or alterations in the mental capacity status of the individual over time, the importance and significance of the physician-patient relationship in the determination of mental capacity for treatment

decisions or the likelihood of deferral of urgent medical treatment decisions until an individual's mental capacity for decision-making is regained. Consequently, it would be highly valuable for future research studies to potentially limit any inherent bias in this current study by performing repeated clinical assessments and evaluations of mental capacity for medical treatment decisions in this general hospital inpatient population, using a number of different study researchers, attempting to also incorporate clinical mental capacity assessments from the patient's primary treating physician for mental capacity evaluation and ultimately, to continue to build upon existing data and published material on this complex and multifaceted healthcare subject matter.

Additionally, comparison between the results of mental capacity for medical treatment decisions obtained from the individual's primary treating physician and also the study researchers would be very interesting and thought-provoking in delineating any inherent advantages or partiality between both mental capacity assessment methods and outcomes. Future research on this complex subject matter could also advantageously assess and evaluate further potential relationships and associations between mental incapacity and accompanying cognitive parameters, including concentration and supplementary cognitive executive functions and additionally, health literacy, cultural and linguistic factors that may affect the ability of an individual to understand, retain, weigh up or communicate decisions about medical treatment options and alternatives (Amalraj et al., 2009, Supady et al., 2011).

Furthermore, although subscale scores of the MacCAT-T have been utilised and published in previous research studies to evaluate and assess mental capacity for medical treatment decisions and ultimately to provide a binary outcome of the presence or absence of mental capacity (Kolva et al., 2014), further study and validation is needed in

order to characterise in detail the validity and reliability of the use of the MacCAT-T in this way. At present however, urgent action is required to ensure that the rights of all those general hospital inpatients, nursing home residents and individuals in the community who lack, potentially lack or may soon lack mental capacity for medical treatment decisions are recognised and acknowledged and that ultimately, these individuals are treated with the utmost degree of respect, dignity, autonomy and self-sufficiency throughout the community and hospital medical treatment decision-making process. This will be achieved with the delivery and implementation of the Assisted Decision-Making (Capacity) Act 2015 and once instigated, this Act will provide safeguarding for all individuals in need of decision-making assistance and furthermore, guidance to all healthcare and judicial staff involved in its provision.

Future research in this area could usefully seek to replicate these findings in Ireland after the Assisted Decision-Making (Capacity) Act 2015 is commenced and also in other international jurisdictions with similar legislation (e.g. England and Wales). There is also a need to continue to recognise and identify those principal factors underpinning the unexplained variance in mental capacity and incapacity between individual patients, including their level of education, literacy, experience of pain, medication effects etc, and ultimately to continue to conduct research studies with greater patient involvement and participation in order to determine which fundamentals of mental capacity for medical treatment decisions patients struggle with the most and how they can be best supported further in optimising their mental capacity in the very often extremely challenging setting of the inpatient hospital ward.

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Appendix A

THIS NOTEPAPER MUST NOT BE USED FOR
PRESCRIPTIONS OR INVOICING PURPOSES



**THE ADELAIDE & MEATH
HOSPITAL, DUBLIN**
INCORPORATING
THE NATIONAL CHILDREN'S HOSPITAL

TALLAGHT, DUBLIN 24, IRELAND
TELEPHONE +353 1 4142000

SJH/AMNCH Research Ethics Committee Secretariat
Claire Hartin, Ph: 4142199
email: claire.hartin@amnch.ie

Prof. Brendan Kelly
Professor of Psychiatry
Trinity College Dublin
Trinity Centre for Health Sciences,
Tallaght Hospital,
Dublin 24
Ireland.

3rd October 2016

Re: Mental Capacity for Medical Treatment Decisions in Hospital Inpatients in Tallaght Hospital

REC Reference: 2016-10 List 39 (1)

(Please quote REC reference on all correspondence)

Dear Prof. Kelly,

Thank you for your recent correspondence in which you responded to the conditions as requested by SJH/AMNCH Research Ethics Committee.

The Chairman of the Committee has reviewed this correspondence, is satisfied with the response and advises that full ethical approval is in place for this study.

The following documents were reviewed and approved:

- A revision letter
- Revised ethics application form
- Revised patient information leaflet
- Revised relative information leaflet
- Application Checklist
- Patient Consent Form
- Relative Assent Form
- CV of Principal Investigator
- Questionnaire ('Capacity MacCat-T Tool')
- Insurance Letters (2)
- Capacity Study Protocol
- Capacity Letter

Yours sincerely,

Claire Hartin
Secretary
SJH/AMNCH Research Ethics Committee

The SJH/AMNCH Joint Research and Ethics Committee operates in compliance with and is constituted in accordance with the European Communities (Clinical Trials on Medicinal Products for Human Use) Regulations 2004 & ICH GCP guidelines.



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Research Ethics Committee
HSE – Midland Area
HSE Area Offices
Arden Road
Tullamore
Co. Offaly

Telephone: 057 9359894

Fax: 057 9359906

21st December 2016

Ref: 071216BK

Prof. Brendan Kelly,
Professor of Psychiatry and Consultant Psychiatrist
Trinity Centre for Health Sciences
Tallaght Hospital,
Dublin 24

Re: Mental capacity for medical treatment decisions in hospital inpatients in Tallaght Hospital Dublin and Midland Regional Hospital Portlaoise

Dear Prof. Kelly,

The above research proposal was reviewed by the Research Ethics Committee (REC) at its meeting held on the 7th of December 2016.

The REC has provided a **Favourable Opinion**.

The REC discussed one aspect of the study which may be of use to you. The extent of mental incapacity for treatment decisions in those who do not have proficiency in English is not being measured. Once you have executed the project in those with proficiency in English, it may be possible to replicate it in those without proficiency in English or perhaps make a reasonable estimate of incapacity in this group based on your findings.

This committee would really appreciate feedback on this project as the prevalence of mental incapacity for treatment decisions in an Irish Hospital setting is of great interest to us in reviewing research.

Best wishes with your research.

Yours Sincerely,

Paul Marsden
Secretary – Research Ethics Committee
On behalf of
Dr. Una Fallon MCRN 014313
Chairperson – Research Ethics Committee

A favourable ethics review from the Research Ethics Committee (REC) is not the same as permission from the relevant HSE manager to proceed with the study. Authorisation from HSE management must be sought separately

Please note that the REC submits details of all reviewed research to LENUS – the Irish Health Repository www.lenus.ie

Appendix B

Date of assessment _____

Date of Birth _____

Medical Record Number _____

Gender

Male ☐ Female ☐

Current Primary Treating Team

Medical ☐ Surgical ☐ Other _____

Number of Diagnoses _____

Body System of Primary Diagnosis

Resp ☐ Cardiovasc ☐ Renal ☐ Neuro ☐ ID ☐ Other _____

Body System of Secondary Diagnosis

Resp ☐ Cardiovasc ☐ Renal ☐ Neuro ☐ ID ☐ Other _____

Body System of Tertiary Diagnosis

Resp ☐ Cardiovasc ☐ Renal ☐ Neuro ☐ ID ☐ Other _____

Consent

From patient ☐ From relative ☐ No one available ☐

Mental Capacity Legislation

Able to understand the information relevant to the decision ☐

Able to retain that information long enough to make a voluntary choice ☐

Able to use or weigh that information as part of the process of making the decision ☐

Able to communicate his/her decision ☐

Marital status

Never married ☐ Married ☐ Separated ☐

Divorced ☐ Widowed ☐

Ethnicity

White Irish ☐ Black or Black Irish – African ☐

White Irish Traveller ☐ Black or Black Irish – Any other Black background ☐

Any other White background ☐ Asian or Asian Irish – Chinese ☐

Other including Mixed background ☐ Asian or Asian Irish – Any other Asian background ☐

Not stated ☐

Social Class

Employers & Managers ☐ Unskilled ☐

Higher Professional ☐ Own Account Worker ☐

Lower Professional ☐ Farmer ☐

Non-Manual ☐ Agricultural Worker ☐

Manual Skilled ☐ Semi-Skilled ☐

All others gainfully occupied & unknown ☐

Appendix C



Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

31 August 2016, Version 1

PATIENT CONSENT FORM

Mental Capacity for Medical Treatment Decisions in Hospital Inpatients in Tallaght Hospital, Dublin and Midland Regional Hospital, Portlaoise

PLEASE TICK YOUR RESPONSE IN THE APPROPRIATE BOX

- I have read and understood the Participant Information YES ☐ NO ☐
- I have had the opportunity to ask questions and discuss the study YES ☐ NO ☐
- I have received satisfactory answers to all my questions YES ☐ NO ☐
- I have received enough information about this study YES ☐ NO ☐
- I understand that I am free to withdraw from the study at any time without giving a reason and without this affecting my future medical care YES ☐ NO ☐
- I agree to take part in the study YES ☐ NO ☐

Participant's Signature: _____

Date: _____

Participant's Name in Print: _____

Investigator's Signature: _____

Date: _____

Investigator's Name in Print: _____

An tOllamh Brendan Kelly
MB BCh BAO, MA MSc MA, MD PhD DGov PhD, FRCPsych, FRCP
Ollamh Síciatrachta

Colette Angelov
Rúnaí

Boinn na Síciatrachta
Ionad Coláiste na Tríonóide do na hEalaíochtaí Sláinte
Osnóidéal Thambhlachta
Baile Átha Cliath 24
Éire

Professor Brendan Kelly
MB BCh BAO, MA MSc MA, MD PhD DGov PhD, FRCPsych, FRCP
Professor of Psychiatry

Colette Angelov
Secretary

Department of Psychiatry
Trinity Centre for Health Sciences
Tallaght Hospital
Dublin 24
Ireland

T +353 (0)1 896 3799

brendan.kelly@tcd.ie
angelouc@tcd.ie
www.medicine.tcd.ie/psychiatry



PARTICIPANT INFORMATION LEAFLET

Mental Capacity for Medical Treatment Decisions in Hospital Inpatients in Tallaght Hospital, Dublin and Midland Regional Hospital, Portlaoise

Professor Brendan Kelly (Tallaght Hospital and Trinity College Dublin)

**You are being invited to participate in a research study.
Thank you for taking time to read this.**

WHAT IS THE PURPOSE OF THE STUDY?

This study examines how well patients in hospital understand the treatment choices they face and how well they can make decisions. We know that many people who are sick in hospital find information difficult to understand and remember, and find it difficult to make decisions about treatment.

Often, people rely on family members and hospital staff members to help with these decisions. *This study will help plan supports for people to make good decisions about treatment in hospital in the future.*

WHY HAVE I BEEN CHOSEN TO PARTAKE IN THIS STUDY?

You have been invited to participate in this study because you are an inpatient in Tallaght Hospital, Dublin or Midland Regional Hospital, Portlaoise, and you are aged 18 years or over.

WHAT WILL HAPPEN IF I VOLUNTEER TO PARTICIPATE?

This study involves a 20-minute discussion with a researcher to figure out the extent of your ability to understand your treatment choices in hospital and to make a decision. This is an entirely anonymous study.

Beforehand, the researcher will look at your clinical file in order to understand why you are in hospital and record this information, along with your gender and date of birth. Your 20-minute discussion with the researcher will explore your understanding of why you are in hospital, what treatment options are available to you, and your understanding of the pros and cons of these treatment options.

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The researcher will not provide additional information about your treatment, but will discuss *your* understanding of the treatment options for you.

You can stop the discussion at any point or ask for it to be broken into shorter periods, if you wish.

The researcher will keep an anonymous record of why you are in hospital, what your treatment options are, your understanding of the treatment options, and how you weigh the options up. The researcher will process this information afterwards and perform an analysis of all the information collected in the study in order to write and publish research papers and reports.

No identifying material will be used in any reports of this study. *All data will be entirely anonymous and will be destroyed after analysis is complete. Confidentially will be maintained at all times.*

ARE THERE ANY RISKS INVOLVED IN PARTICIPATING?

There are minimal risks involved in this study. If you become upset or unwell during the discussion, the discussion will cease and care will be provided.

ARE THERE ANY BENEFITS INVOLVED IN PARTICIPATING?

This study will not affect your care in any way. This study examines how well patients in hospital understand the treatment choices they face and how well they can make decisions. The results will help plan better supports for people to make good decisions in hospital in the future.

WHAT HAPPENS IF I DO NOT AGREE TO PARTICIPATE?

If you do not wish to participate, there are no consequences whatsoever for you. Your treatment will not be affected in any way.

WILL MY PARTICIPATION OR WITHDRAWAL HAVE ANY IMPACT ON MY ROUTINE CARE? No.

WILL MY PARTICIPATION BE CONFIDENTIAL? Yes.

INDEMNITY Your doctors are insured by the State Claims Insurance Service and the research is covered by Trinity College Dublin insurance.

WHO IS ORGANISING AND FUNDING THIS RESEARCH?

This research is organised and funded by Trinity College Dublin in collaboration with Tallaght Hospital and Midland Regional Hospital, Portlaoise.

HAS THIS STUDY REVIEWED BY AN ETHICS COMMITTEE? Yes.

CONTACT DETAILS

Professor Brendan Kelly, Trinity Centre for Health Sciences, Tallaght Hospital, Dublin 24. Telephone: 01 896 3799.



RELATIVE ASSENT FORM

Mental Capacity for Medical Treatment Decisions in Hospital Inpatients in Tallaght Hospital, Dublin and Midland Regional Hospital, Portlaoise

PLEASE TICK YOUR RESPONSE IN THE APPROPRIATE BOX

- I have read and understood the Relative Information Leaflet YES ☐ NO ☐
- I have had the opportunity to ask questions and discuss the study YES ☐ NO ☐
- I have received satisfactory answers to all my questions YES ☐ NO ☐
- I have received enough information about this study YES ☐ NO ☐
- I understand that my relative is free to withdraw from the study at any time without giving a reason and without this affecting their future medical care YES ☐ NO ☐
- I agree to my relative's participation in the study YES ☐ NO ☐

Participant's Relative's Signature: _____

Date: _____

Participant's Relative's Name in Print: _____

Investigator's Signature: _____

Date: _____

Investigator's Name in Print: _____

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RELATIVE INFORMATION LEAFLET

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Professor Brendan Kelly (Tallaght Hospital and Trinity College Dublin)

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Thank you for taking time to read this.**

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This study examines how well patients in hospital understand the treatment choices they face and how well they can make decisions. We know that many people who are sick in hospital find information difficult to understand and remember, and find it difficult to make decisions about treatment.

Often, people rely on family members and hospital staff members to help with these decisions. *This study will help plan supports for people to make good decisions about treatment in hospital in the future.*

WHY HAS MY RELATIVE BEEN CHOSEN TO PARTAKE IN THIS STUDY?

Your relative has been invited to participate in this study because he or she is an inpatient in Tallaght Hospital, Dublin or Midland Regional Hospital, Portlaoise, and he or she is aged 18 years or over.

WHAT WILL HAPPEN IF MY RELATIVE IS INCLUDED IN THIS RESEARCH STUDY?

This study involves a 20-minute discussion with a researcher to figure out the extent of your relative's ability to understand his or her treatment choices in hospital and to make a decision. This is an entirely anonymous study.

Beforehand, the researcher will look at your relative's clinical file in order to understand why your relative is in hospital and record this information, along with your relative's gender and date of birth. Your relative's 20-minute discussion with the researcher will explore your relative's understanding of why he or she is in hospital, what treatment options are available, and your relative's understanding of the pros and cons of these treatment options.

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The researcher will not provide additional information about your relative's treatment, but will discuss *your relative's* understanding of the treatment options.

Your relative can stop the discussion at any point or ask for it to be broken into shorter periods, if he or she wishes.

The researcher will keep an anonymous record of why your relative is in hospital, what the treatment options are, your relative's understanding of the treatment options, and how your relative weighs the options up. The researcher will process this information afterwards and perform an analysis of all the information collected in the study in order to write and publish research papers and reports. *All data will be entirely anonymous and will be destroyed after analysis is complete. Confidentiality will be maintained at all times.*

ARE THERE ANY RISKS INVOLVED IN MY RELATIVE'S PARTICIPATION?

There are minimal risks involved in this study. If your relative becomes upset or unwell during the discussion, the discussion will cease and care will be provided.

ARE THERE ANY BENEFITS FROM MY RELATIVE'S PARTICIPATION?

This study will not affect your relative's care in any way. This study examines how well patients in hospital understand the treatment choices they face and how well they can make decisions. The results will help plan better supports for people to make good decisions in hospital in the future.

WHAT HAPPENS IF I DO NOT AGREE TO MY RELATIVE'S PARTICIPATION?

If your relative is not included in this study, his or her treatment will not be affected in any way.

WILL MY PARTICIPATION OR WITHDRAWAL HAVE ANY IMPACT ON THEIR ROUTINE CARE?

No.

WILL MY RELATIVE'S PARTICIPATION BE CONFIDENTIAL?

Yes.

INSURANCE

Your relative's doctors are adequately insured by the clinical indemnity scheme and the research is covered by Trinity College Dublin insurance.

WHO IS ORGANISING AND FUNDING THIS RESEARCH?

This research is organised and funded by Trinity College Dublin in collaboration with Tallaght Hospital and Midland Regional Hospital, Portlaoise.

CONFIDENTIALITY

No identifying material will be used in any reports of this study.

HAS THIS STUDY REVIEWED BY AN ETHICS COMMITTEE?

Yes.

CONTACT DETAILS

Professor Brendan Kelly.

Trinity Centre for Health Sciences, Tallaght Hospital, Dublin 24.

Telephone: 01 896 3799.

Appendix D

MacCAT-T RECORD FORM

Patient: _____ Clinician: _____
Date: _____ Time: _____ Unit: _____

UNDERSTANDING-DISORDER

Disclose: "Now please explain in your own words what I've said about your condition."
Probe (if necessary): Re-Disclose and Re-Inquire (if necessary).

Disclosure	Patient Response
#1 Diagnosis	Rating ☐
#2 Feature of Disorder	Rating ☐
#3 Feature of Disorder	Rating ☐
#4 Feature of Disorder	Rating ☐
#5 Course of Disorder	Rating ☐
Understanding-Disorder (Sum) ☐	
Other	

MacArthur Competence Assessment Tool for Treatment (MacCAT-T)
Copyright © 1998 Professional Resource Exchange, Inc.
Thomas Grisso and Paul S. Appelbaum / University of Massachusetts Medical School
Developed with support from the John D. and Catherine T. MacArthur Foundation

APPRECIATION-DISORDER

Inquire: "Now that is what we think is the problem in your case. If you have any reason to doubt that, I'd like you to tell me so. What do you think?"

☐ Agrees

☐ Disagrees

☐ Ambivalent

Probe: If patient disagrees or is ambivalent, description of disagreement and patient's explanation.

Explanation
Appreciation-Disorder ☐

UNDERSTANDING-TREATMENT

Disclose: "Now please explain in your own words what I've said about this treatment."

Probe (if necessary): Re-Disclose and Re-Inquire (if necessary).

Disclosure	Patient Response
#1 Name of Treatment	Rating ☐
#2 Feature of Treatment	Rating ☐
#3 Feature of Treatment	Rating ☐
#4 Feature of Treatment	Rating ☐
Understanding-Treatment (Sum) ☐	
Other	

UNDERSTANDING-BENEFITS/RISKS

Disclose: "Now please explain in your own words what I've said about benefits and risks of this treatment."

Probe (if necessary): Re-Disclose and Re-Inquire (if necessary).

Disclosure	Patient Response
#1 Benefit	Rating ☐
#2 Benefit	Rating ☐
#3 Risk	Rating ☐
#4 Risk	Rating ☐
Understanding-Benefits/Risks (Sum) ☐	
Other	

Inquire: “You might or might not decide that this is the treatment you want - we’ll talk about it later. But do you think it’s possible that this treatment might be of some benefit to you?”

☐ Agrees

☐ Disagrees

☐ Ambivalent

Probe: "So you feel that it is/isn't possible for that treatment to be of some help for your condition. Can you explain that to me? What makes it seem that the treatment would/wouldn't be of possible benefit to you?"

Appreciation-Treatment

ALTERNATIVE TREATMENTS

See Alternative Treatment (AT) Forms, one for each Alternative Treatment.

FIRST CHOICE AND REASONING

Choice: “Now let’s review the choices that you have. First . . .; second . . .; and so on (name each treatment option reviewed earlier, including no-treatment option). Which of these seems best for you? Which do you think you are most likely to want?”

Choice _____

Inquire: "You think that (state patient's choice) might be best. Tell me what it is that makes that seem better than the others."

Probe: Discuss explanation to explore reasoning process.

Explanation	Consequential	Comparative

GENERATE CONSEQUENCES

Inquire-1: “I told you about some of the possible benefits and risks or discomforts of (name the patient’s preferred treatment option). What are some ways that these might influence your everyday activities at home or at work?”

Consequences-1	
	Consequences-1 ☐

Inquire-2: “Now let’s consider (name of any other treatment or the no-treatment option). What are some ways that the outcomes of that option might influence your everyday activities at home or at work?”

Consequences-2	
	Consequences-2 ☐

Generate Consequences (Sum) ☐

FINAL CHOICE

Inquire: “When we started this discussion you favored (insert ‘First Choice’ from earlier inquiry, or note that the patient seemed to be having difficulty deciding). What do you think now that we have discussed everything? Which do you want to do?”

Choice	
	Express Choice ☐

LOGICAL CONSISTENCY OF CHOICE

Examiner’s Explanation	
	Logical Consistency ☐

MacCAT-T RATING SUMMARY

	Sum of Ratings	$\div$	Number of Items		Subtotal Rating
UNDERSTANDING					
Disorder	_____	$\div$	_____	=	_____
Treatment	_____	$\div$	_____	=	_____
Benefits/Risks	_____	$\div$	_____	=	_____

Understanding Summary Rating (0-6)

APPRECIATION

Disorder	_____
Treatment	_____

Appreciation Summary Rating (0-4)

REASONING

Consequential	_____
Comparative	_____
Generate Consequences	_____
Logical Consistency	_____

Reasoning Summary Rating (0-8)

Expressing A Choice Summary Rating (0-2)

OPTIONAL: Summary scores for Understanding of each alternative treatment

Alternative 1:

Alternative 3:

Alternative 2:

Alternative 4:

Appendix E



Number 64 of 2015

Assisted Decision-Making (Capacity) Act 2015

- (ii) the imprisonment, or the taking into lawful custody, of the person concerned.

Person's capacity to be construed functionally

3. (1) Subject to *subsections (2) to (6)*, for the purposes of this Act, a person's capacity shall be assessed on the basis of his or her ability to understand, at the time that a decision is to be made, the nature and consequences of the decision to be made by him or her in the context of the available choices at that time.
- (2) A person lacks the capacity to make a decision if he or she is unable—
- (a) to understand the information relevant to the decision,
 - (b) to retain that information long enough to make a voluntary choice,
 - (c) to use or weigh that information as part of the process of making the decision, or
 - (d) to communicate his or her decision (whether by talking, writing, using sign language, assistive technology, or any other means) or, if the implementation of the decision requires the act of a third party, to communicate by any means with that third party.
- (3) A person is not to be regarded as unable to understand the information relevant to a decision if he or she is able to understand an explanation of it given to him or her in a way that is appropriate to his or her circumstances (whether using clear language, visual aids or any other means).
- (4) The fact that a person is able to retain the information relevant to a decision for a short period only does not prevent him or her from being regarded as having the capacity to make the decision.
- (5) The fact that a person lacks capacity in respect of a decision on a particular matter at a particular time does not prevent him or her from being regarded as having capacity to make decisions on the same matter at another time.
- (6) The fact that a person lacks capacity in respect of a decision on a particular matter does not prevent him or her from being regarded as having capacity to make decisions on other matters.
- (7) For the purposes of this section, information relevant to a decision shall be construed as including information about the reasonably foreseeable consequences of—
- (a) each of the available choices at the time the decision is made, or
 - (b) failing to make the decision.

Appendix F

ORIGINAL PAPER

Who can decide? Prevalence of mental incapacity for treatment decisions in medical and surgical hospital inpatients in Ireland

R. Murphy¹, S. Fleming², A. Curley^{1,3}, R.M. Duffy^{1,4} and B.D. Kelly¹

From the ¹Department of Psychiatry, Trinity College Dublin, Trinity Centre for Health Sciences, Tallaght University Hospital, Dublin D24 NR0A, Ireland, ²Department of Medicine, Midland Regional Hospital, Portlaoise, County Laois R32 RW61, Ireland, ³Department of Psychiatry, Crosslanes, Drogheda, County Louth A92 TC3R, Ireland and ⁴Department of Adult Psychiatry, Mater Misericordiae University Hospital, Dublin D07 YH5R, Ireland

Address correspondence to Prof. B.D. Kelly, Department of Psychiatry, Trinity College Dublin, Trinity Centre for Health Sciences, Tallaght University Hospital, Dublin 24, D24 NR0A, Ireland. email: brendan.kelly@tcd.ie

Summary

Background: The prevalence of mental incapacity for treatment decisions among medical and surgical hospital inpatients is poorly understood or not known in many countries, including Ireland.

Aim: To assess the prevalence of mental incapacity in hospital inpatients in Ireland.

Design: Cross-sectional observational study of mental incapacity for treatment decisions.

Methods: We assessed mental capacity in 300 randomly selected hospital inpatients in 2 general hospitals in Dublin (urban) and Portlaoise (rural), in Ireland, using the MacArthur Competence Assessment Tool for Treatment (MacCAT-T).

Results: Mean MacCAT-T score was 14.80 (SD: 8.40) out of a possible maximum of 20 (with a higher score indicating greater mental capacity). Over one quarter of participants (27.7%; $n = 83$) lacked the mental capacity for treatment decisions; 1.7% ($n = 5$) had partial capacity and 70.7% ($n = 212$) had full capacity. Scores for each of the four sub-scales of the MacCAT-T were generally consistent across the four key areas of understanding, appreciation, reasoning and expressing a choice.

Conclusions: Mental incapacity for treatment decisions is common in medical and surgical hospital inpatients in Ireland. This issue both merits and requires greater attention in clinical practice, research and legislation.

Introduction

The concept of mental capacity generates continual debate in terms of both definitions of mental incapacity¹ and appropriate responses when capacity is impaired.^{2,3} These are important issues. In England, up to 40% of acute medical inpatients lack the mental capacity for key treatment decisions,^{4,5} when mental capacity is systematically assessed using the MacArthur

Competence Assessment Tool for Treatment (MacCAT-T) and other methods.^{6,7} In Greece, 51% of patients in the internal medicine ward of a general hospital in Arta lacked mental capacity when assessed.⁸ Other studies report rates of mental incapacity among medical inpatients generally ranging from 26%⁹ to 34%.¹⁰ For many countries, including Ireland, there are no data about the prevalence of mental incapacity among hospital inpatients.

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One of the reasons for the paucity of definitive research about so many aspects of mental capacity in clinical practice is that research in this area is rendered complex by the fact that it requires the involvement of patients who lack mental capacity to consent to research. Research ethics committees are understandably apprehensive about this because many countries do not have relevant guidelines; England and Wales are a notable exception owing to the research provisions of the Mental Capacity Act 2005 (Sections 30–34).

Against this background, our objective was to assess the prevalence of mental incapacity in 300 medical and surgical inpatients in Ireland (making this the first study to address this matter in Ireland and one of the largest anywhere). We chose to use the MacCAT-T because it provides a graduated assessment of the patient's ability to understand their disorder and its treatment, appreciate how these matters affect them personally, reason their way through alternatives and express a choice. It is also the gold standard in this field and permits comparison with other studies.^{6,7} We hypothesized that the prevalence of mental incapacity in Ireland would be similar to those in England and elsewhere (i.e. between 26% and 51%).

Materials and methods

This cross-sectional, observational study was based in two general hospitals in Ireland, Tallaght University Hospital in Dublin (which has an urban and suburban catchment area) and Midland Regional Hospital in Portlaoise (which has a rural catchment area).

Tallaght University Hospital is one of Ireland's largest acute teaching hospitals. With 620 beds, 12 theatres and 14 critical care beds in operation, the hospital treats over 410 000 patients per year and employs almost 3000 staff. The hospital provides access for patients to over 20 medical and surgical specialties, with comprehensive on-site laboratory and radiology support services. It is also a national urology centre, the second largest provider of dialysis services in Ireland and a regional orthopaedic trauma centre. Tallaght University Hospital is one of the two main teaching hospitals of Trinity College Dublin.

Midland Regional Hospital, Portlaoise is a 152-bed acute hospital serving the predominantly rural catchment areas of Laois, Offaly, Kildare, Carlow and Tipperary. Established in 1936, it is part of the Dublin Midlands Hospital Group, a network of hospitals in the eastern part of Ireland. The hospital's catchment area includes several regional towns as well as extensive rural areas.

We recruited patients at both hospitals from January to October 2017. For consideration for inclusion in the study, a patient had to be admitted as a medical or surgical inpatient in Tallaght University Hospital or Midland Regional Hospital during the study period; aged 18 years or over and proficient in the English language. We identified patients from hospital inpatient census lists and recruited patients from each hospital ward, using random numbers to select patients in each ward. Data collection was stratified by hospital ward in both hospitals because certain wards tend to have certain kinds of patients (medical, surgical, elderly, intensive care, etc.).

This study did not compare outcomes across groups so, in place of a statistical power calculation, we selected a sample size of 300 participants so that our study would be comparable with, or larger than, other key studies in the field, such as Raymont et al (302 acute medical inpatients),⁴ Owen et al. (125 psychiatric admissions and 164 medical admissions)⁵ and Bilanakis et al. (134 medical inpatients).⁸ Three hundred

participants was also a pragmatically achievable sample size in the study setting, proportionately and pragmatically divided between the two participating hospitals (200 in the urban hospital and 100 in the rural hospital).

The key outcome variable of interest was mental incapacity assessed using the MacCAT-T. Other variables studied included gender, age, marital status, employment status, ethnicity, location of hospital (urban or rural), current primary treating team (medical or surgical), body system of primary diagnosis (e.g. respiratory, cardiovascular, etc.) and number of diagnoses.

The MacCAT-T is a semi-structured interview that yields scores on four scales (with higher scores indicating greater mental capacity): (i) understanding of the disorder and its treatment, including associated benefits and risks (rated from 0 to 6, comprising three sub-scales, each rated from 0 to 2: understanding of the disorder, treatment and benefits/risks); (ii) appreciation of the disorder and its treatment; i.e. how the patient understands how they could be specifically affected, which usually entails some level of insight (rated from 0 to 4, comprising two sub-scales, each rated from 0 to 2: appreciation of the disorder and appreciation of treatment); (iii) reasoning, which assesses the processes behind the decision and ability to compare alternatives in view of their consequences (rated from 0 to 8, comprising four sub-scales, each rated from 0 to 2: consequential reasoning, comparative reasoning, generating consequences and logical consistency) and (iv) the ability to express a choice (rated from 0 to 2). The MacCAT-T measures these elements of mental capacity on continuous scales with a high degree of inter-rater reliability (ranging between 0.99 for 'understanding' and 0.87 for 'appreciation'), and the overall mental capacity score ranges from 0 to 20.^{6,11}

The MacCAT-T is not generally used to generate binary outcomes regarding the presence or absence of mental capacity; it is often coupled with other tools or *ad hoc* clinical assessments of mental capacity for this purpose. For our analysis, however, we followed the method outlined by Kolva et al, who noted that previous studies of the MacCAT-T had used cut-off scores to classify levels of decisional impairment.¹² Building on this work, Kolva et al., in their paper, generated scores classifying participants as 'impaired', 'borderline' or 'unimpaired' on each of four subscales (understanding, appreciation, reasoning and expressing a choice) based closely on the MacCAT-T instrument.

For the understanding subscale, scores in the 0–2 range were 'impaired'; scores of 5 or greater were 'unimpaired' and scores in between these extremes were 'borderline'. On the appreciation subscale, scores below 2 were 'impaired'; scores of 3 or greater were 'unimpaired' and scores in between were 'borderline'. On the reasoning subscale, scores below 4 were 'impaired'; scores of 7 or greater were 'unimpaired' and scores in between were 'borderline'. On the expressing a choice subscale, scores below 1 were 'impaired'; scores of 2 or greater were 'unimpaired' and scores in between were 'borderline'.

As a result, following this re-coding, each subscale score ranged from 0 to 2 where 0 indicated that the participant lacked the ability to perform this task; 1 indicated partial ability and 2 indicated adequate ability.¹² Together, these four subscales then yielded a second overall mental capacity score ranging from 0 to 8, with a score of 0 indicating lack of mental capacity, 8 indicating full mental capacity and scores in between indicating partial mental capacity.

All ratings were performed by a trained clinician with more than 5 years training in psychiatry and membership of the Royal College of Psychiatrists (RM), consistent with established

methodology⁵ and with appropriate ongoing supervision by another trained assessor (BDK). For additional quality control, there were joint assessments of certain patients with another trained clinician with more than 5 years training in psychiatry and membership of the Royal College of Psychiatrists (AC), also under supervision (BDK).

For this study, it was imperative that all patients eligible to participate were approached and invited to participate regardless of level of mental capacity, in order to gain a complete picture of the prevalence of mental incapacity among all inpatients and to avoid selection bias. As a result, we formulated a detailed, multi-step consent procedure that was approved by the Tallaght University Hospital/St James's Hospital Joint Research Ethics Committee, Dublin, Ireland [references 2016–10 List 39 (1) and 2017–5 List 17(9)] and the Health Service Executive Midland Area Research Ethics Committee, Tullamore, County Offaly (reference 071216BK), both of whom approved the study.

The study consent procedure was as follows:

- Any patient (with or without mental capacity) who indicated in any way that he or she did not wish to participate was excluded from the study immediately.
- We obtained written informed consent from patients with mental capacity to provide such consent. There is a legal presumption of mental capacity in Ireland so it was only in cases where we had *prima facie* reason to believe that the patient lacked mental capacity to consent to the study that we could question the presumption of mental capacity to participate.
- For patients who lacked mental capacity to consent to the study, we developed a next-of-kin/relative information leaflet and assent form, and we obtained assent in this fashion from their next-of-kin or relative when feasible; i.e. when a next-of-kin or relative was named and available. On receiving such assent, we proceeded with our assessments provided the patient assented and did not object at any point. In these cases, we sought 'deferred consent' if the patient regained mental capacity during the study period. If, on regaining mental capacity, any patient had declined to provide such 'deferred consent', we would have destroyed the data relating to that patient, but this circumstance did not arise in the study.
- For patients who lacked mental capacity to consent to the study and there was no next-of-kin or relative named or available, we were to proceed with our assessments provided the patient assented and did not object at any point. In these cases, we were to seek 'deferred consent' if the patient regained mental capacity during the study period. If, on regaining mental capacity, any patient had declined to provide such 'deferred consent', we would have destroyed the data relating to that patient, but this circumstance did not arise in the study.

Data were stored, described and analysed using IBM SPSS Statistics 23. We generated a linear regression model with capacity score (out of 20; higher score indicating greater mental capacity) as per the MacCAT-T as the dependent variable. Independent variables included gender, age, marital status, employment status, ethnicity, location of hospital (urban or rural), current primary treating team (medical or surgical), body system of primary diagnosis (e.g. respiratory, cardiovascular, etc.) and number of diagnoses.

We tested for multicollinearity, which is when two or more variables are so closely related to each other that the model cannot reliably distinguish the independent effects of each. For this, we calculated a 'tolerance value' for each independent variable; tolerance values below 0.25 indicate possible multicollinearity, and tolerance values below 0.10 indicate significant problems with multicollinearity.¹³ There were no missing data.

Results

Three hundred medical and surgical inpatients (200 in the urban hospital and 100 in the rural hospital) were randomly selected and invited to participate; all agreed. Consent was obtained from all participants as outlined in the consent procedure in the Materials and Methods Section (above). Half of the participants were female (51.7%) and 95.3% were Irish (Table 1).

Mean MacCAT-T score was 14.80 (SD: 8.40) out of a possible maximum of 20 (with a higher score indicating greater mental capacity). Over one quarter of participants (27.7%; $n = 83$) lacked mental capacity for hospital treatment decisions; 1.7% ($n = 5$) had partial mental capacity and 70.7% ($n = 212$) had full mental capacity. Scores for each of the four sub-scales of the MacCAT-T were generally consistent across the four key areas of understanding, appreciation, reasoning and expressing a choice (Table 2).

Linear regression analysis of overall capacity score showed that greater age, having never married, not working outside the home, being a medical rather than surgical inpatient and having a greater number of diagnoses were apparently significantly associated with mental incapacity (Table 1). There were no apparently statistically significant relationships between mental incapacity and gender, ethnicity, location of the hospital, or body system affected by the current illness.

Discussion

Over one quarter of medical or surgical hospital inpatients lack the mental capacity for hospital treatment decisions. A small number (1.7%) have partial mental capacity and almost 70.7% have full mental capacity. Individual patients tend to score consistently across the four key areas of understanding, appreciation, reasoning and expressing a choice; i.e. those with full mental capacity tend to score highly in all four areas and those without mental capacity achieve low scores in all four areas.

We also found that mental incapacity is apparently associated with various demographic variables such as greater age, having never married, not working outside the home, being a medical rather than surgical inpatient and having a greater number of diagnoses. It should be noted, however, that cognitive strengths and weaknesses, rather than demographic characteristics, are central to the MacCAT-T assessment of mental capacity, so the apparent relationships between mental capacity and demographic variables described here are highly unlikely to be independent of cognitive performance, which is the central factor underlying the MacCAT-T.^{14,15}

Our study has several strengths and weaknesses. The chief strengths are that this is the first significant study of mental incapacity among hospital inpatients in Ireland; it includes hospitals with both urban and rural catchment areas and it is comparable in size with leading studies in the field.^{4,5,8}

Weaknesses include the fact that our analysis is cross-sectional and does not take account of changes in mental capacity over time. In clinical practice, many non-urgent decisions are deferred if a person has temporary mental incapacity and are revisited when the person has regained mental capacity. Our study, by contrast, looked at mental incapacity at a single point in time. This was in order to obtain a cross-sectional assessment of the proportion of hospital inpatients who lack mental capacity at a given time, although we are aware that a study involving repeated assessments of mental capacity would be a valuable addition to the literature.

Owing to Ireland's presumption of mental capacity, and in accordance with our approved consent procedure (see Materials

Table 1. Demographic and clinical description of sample (n = 300) of medical and surgical adult hospital inpatients in Ireland in this study of mental capacity for treatment decisions

Variables		All patients n = 300	Linear regression analysis of mental capacity score as per MacCAT-T ^a		
			β	P	Tolerance value ^b
Gender n (%)	Women	155 (51.7)	-1.198	0.196	0.813
	Men	145 (48.3)			
Age (years) Mean (standard deviation)		70.2 (15.6)	-0.127	<0.001	0.772
Marital status n (%)	Never married	55 (18.3)	1.522	0.023	0.778
	Married	142 (47.3)			
Employment status n (%)	Divorced, separated or widowed	103 (34.3)	-2.826	<0.001	0.828
	Employed outside the home	143 (47.7)			
	Works in the home	76 (25.3)			
	Unemployed	46 (15.3)			
Ethnicity n (%)	Other	35 (11.7)	-1.002	0.616	0.984
	Irish	286 (95.3)			
Location of hospital n (%)	Non-Irish	14 (4.7)	0.672	0.151	0.897
	Urban	200 (66.7)			
Primary treating team n (%)	Rural	100 (33.3)	3.183	0.001	0.765
	Medical	187 (62.3)			
Primary body system affected by current illness n (%)	Surgical	113 (37.7)	-0.307	0.114	0.813
	Respiratory	57 (19.0)			
	Cardiovascular	32 (10.7)			
	Renal	19 (6.3)			
	Neurology	39 (13.0)			
	Infectious disease	35 (11.7)			
	Musculo-skeletal	35 (11.7)			
	Gastroenterology	57 (19.0)			
	Other	26 (8.7)			
Number of diagnoses n (%)	One	158 (52.7)	-2.519	<0.001	0.917
	Two	118 (39.3)			
	Three or more	24 (8.0)			

^aLinear regression analysis of mental capacity for treatment decisions with mental capacity score (out of 20; higher score indicating greater mental capacity) as per the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) as the dependent variable; $r^2 = 26.1\%$; $P < 0.001$; see text for critical discussion of this analysis.

^bAll tolerance values were greater than 0.25 indicating no problems with multicollinearity.¹³

Table 2. Mental capacity subscale scores in medical and surgical adult hospital inpatients assessed using the MacArthur Competence Assessment Tool for Treatment (MacCAT-T)

Subscale ^a	Score ^b	n (%)
Understanding	2	214 (71.3)
	1	6 (2.0)
	0	80 (26.7)
Appreciation	2	226 (75.3)
	1	7 (2.3)
	0	67 (22.3)
Reasoning	2	213 (71.0)
	1	4 (1.3)
	0	83 (27.7)
Expressing a choice	2	220 (73.3)
	1	10 (3.3)
	0	70 (23.3)

^an = 300.

^bAll sub-scores range from 0 to 2; higher score indicating greater mental capacity (see text for details).¹²

and Methods Section), we did not formally test mental capacity to participate in research in this study but that would merit future study as it may differ from capacity for treatment decisions.¹⁶

We sought to minimize selection bias by studying two hospitals (one urban and one rural), developing an inclusive consent procedure, sampling patients from all hospital wards and using random numbers to select patients within each ward. Nonetheless, there might still be residual selection bias (in either direction) as a result of unknown factors. The use of a single rater for all assessments might have also introduced bias but has the merit of consistency and was intended to replicate clinical realities. Finally, our use of the MacCAT-T to generate a binary assessment of mental capacity, while based on previous work,¹² requires further study and validation in order to characterize in detail its validity and reliability.

Our findings regarding the prevalence of mental incapacity appear reasonably generalizable beyond the study settings because they are based on a broad variety of hospital patients and the assessment of mental incapacity that we used (the MacCAT-T) is not dependent on local factors (such as legislation). This generalizability is supported by the consistency of our findings with the broader (albeit limited) literature to date.^{4,5,8-10}

Overall, the high rate of mental incapacity in our study (27.7%) underscores the importance of commencing Ireland's new mental capacity legislation, the Assisted Decision-Making (Capacity) Act 2015, which has been passed by Parliament and signed by the President but awaits implementation, as the health service and other organizations prepare relevant codes

of practice.^{17,18} As the rate of mental incapacity among hospital inpatients in our study is consistent with those reported in other jurisdictions, there is clearly similar need to pay greater attention to mental incapacity in other countries too, by promoting advance care planning, devising protocols to follow when patients lack mental capacity for treatment decisions and ensuring that patients' rights, including the right to treatment, are respected.^{19,20}

Mental incapacity both merits and requires greater attention in clinical practice, research and legislation. Future research could usefully examine more closely the possible relationships between mental capacity and cognitive parameters (e.g. concentration, executive functions) and cultural or linguistic factors that might affect ability to communicate decisions about treatment. For the moment, however, robust practice protocols are urgently required to ensure that the rights of the 27.7% of hospital inpatients who lack mental capacity for treatment decisions are respected and promoted in the provision of care.

Acknowledgement

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Appendix G

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Convergence or divergence? Comparing mental capacity assessments based on legal and clinical criteria in medical and surgical inpatients

Ruth Murphy*, Sean Fleming**, Aoife Curley***, Richard M Duffy****, Brendan D Kelly*****

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* Ruth Murphy is a Senior Registrar in Psychiatry at Tallaght University Hospital, Dublin, D24 NR0A, Ireland. She earned her MB BCh BAO at the National University of Ireland, Galway and is completing her MD at Trinity College Dublin, Ireland. Correspondence to ruthannmurphy1@gmail.com

** Sean Fleming is a Consultant Physician in the Midlands Regional Hospital, Dublin Road, Portlaoise, County Laois, R23 RW61, Ireland. He earned his MB BCh BAO at the National University of Ireland, Galway.

*** Aoife Curley is a Senior Registrar in Psychiatry at Drogheda Department of Psychiatry, Crosslane, Drogheda, County Louth, A92 TC3R, Ireland. She earned her MB BCh BAO from Trinity College Dublin.

**** Richard M. Duffy is a Consultant Psychiatrist at the Department of Adult Psychiatry, Mater Misericordiae University Hospital, Dublin, D07 YH5R, Ireland. He earned his MB from Trinity College Dublin.

***** Brendan D. Kelly is a Professor of Psychiatry at the Department of Psychiatry, Trinity College Dublin, Trinity Centre for Health Sciences, Tallaght University Hospital, Dublin, D24 NR0A, Ireland.

I ABSTRACT

Despite the high prevalence of mental incapacity for treatment decisions in hospitals (27.7%), there is little information about the relationship, if any, between mental capacity assessments based on clinical and legal criteria. We performed a cross-sectional study of mental incapacity for treatment decisions in 300 hospital inpatients in two hospitals in Ireland, using the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) and the legal definition of mental incapacity in Ireland's incoming Assisted Decision-Making (Capacity) Act 2015. We found that patients who lacked mental capacity according to the legal criteria scored significantly lower on all four sub-scales of the MacCAT-T (understanding, appreciation, reasoning and communication) compared to those who had mental capacity according to the legal criteria. In light of the similarity between Ireland's legal definition of mental incapacity and legislative definitions in other jurisdictions (e.g. England and Wales), we conclude that legal assessments of mental incapacity in these countries accord closely with clinical assessments (as reflected in the MacCAT-T). Ireland's new mental capacity legislation should be implemented promptly in order to further operationalize Ireland's new legal definition of mental incapacity and provide patients with the supports they need to optimize their mental capacity for treatment decisions in hospitals.

Keywords: Mental capacity, Hospital inpatients, Ireland, Legislation, MacCAT-T

II Introduction

The management of mental incapacity for treatment decisions is complex, multifaceted and rendered especially challenging by a paucity of research on this topic.¹ Further challenges stem from the use of different clinical and legal definitions of mental capacity which vary between jurisdictions. There is also commonly tension between clinical and legal definitions, not least because legislation in many countries defines mental incapacity rather than capacity. There is, moreover, exceptionally little literature on the relationship, if any, between clinical and legal definitions of mental capacity or incapacity in clinical care.

From clinical and research perspectives, mental capacity for treatment decisions in hospitals is commonly assessed using the MacArthur Competence Assessment Tool for Treatment (MacCAT-T) which has become the most widely used tool in this field.² Studies from various countries (other than Ireland) estimate that between one quarter and one half of all medical inpatients at any one time lack the mental capacity for treatment decision according to the MacCAT-T.³ Existing research does not, however, explore the extent to which these clinical assessments of mental capacity accord with legal definitions in the various jurisdictions in which these studies were performed.

¹ Kim SYH. Varieties of decisional incapacity: theory and practice. *British Journal of Psychiatry* 2013; 203: 403-5; Price A. Mental capacity as a safeguard in assisted dying: clarity is needed. *BMJ* 2015; 351: 4461.

² Grisso T, Applebaum PS, Hill-Fotouhi C. The MacCAT-T: a clinical tool to assess patients' capacities to make treatment decisions. *Psychiatric Services* 1997; 48: 1415-9; Grisso T, Applebaum PS. *MacArthur Competence Assessment Tool for Treatment (MacCAT-T)*. Sarasota, FL.: Professional Resource Press, 1998.

³ Sessums LL, Zembrzuska H, Jackson JL. Does this patient have medical decision-making capacity? *JAMA* 2011; 306: 420-7; Bilanakis N, Vratsista A, Athanasiou E, Niakas D, Peritogiannis V. Medical patients' treatment decision-making capacity: a report from a general hospital in Greece. *Clinical Practice and Epidemiology in Mental Health* 2014; 10: 133-9.

Up until 2018, there had been no systematic studies of mental capacity for treatment decisions among hospital inpatients in Ireland. Against this background, we used the MacCAT-T to assess mental capacity in 300 hospital inpatients in urban and rural areas of Ireland.⁴ Consistent with international research, we found that over one quarter of patients (27.7%) lacked mental capacity for hospital treatment decisions; 1.7% had partial mental capacity; and 70.7% had full mental capacity. Mental incapacity was associated with greater age, having never married, not working outside of the home, being a medical rather than surgical inpatient, and having a greater number of diagnoses.

Mental capacity legislation is, however, changing in Ireland. The Assisted Decision-Making (Capacity) Act 2015 has been passed by parliament and signed by the president but has not yet commenced in practice, in order to facilitate preparations for the legislation. The 2015 Act introduces new models of supported decision-making, among many other innovations.⁵ Most significantly, perhaps, the new legislation introduces a new definition of mental incapacity, stating that ‘a person lacks the capacity to make a decision if he or she is unable (a) to understand the information relevant to the decision; (b) to retain that information long enough to make a voluntary choice; (c) to use or weigh that information as part of the process of making the decision; or (d) to communicate his or her decision (whether by talking, writing, using sign language, assistive technology, or any other means) or, if the implementation of the decision requires the act of a third party, to communicate by any means with that third party’ (Section 3(2)).

⁴ Murphy R, Fleming S, Curley A, Duffy RM, Kelly BD. Who can decide? Prevalence of mental incapacity for treatment decisions in medical and surgical hospital inpatients in Ireland. *QJM* 2018; 111: 881-5.

⁵ Kelly BD. The Assisted Decision-Making (Capacity) Act 2015: what it is and why it matters. *Irish Journal of Medical Science* 2017; 186: 351-6.

This definition broadly accords with those in many other countries (e.g. England and Wales) and we saw the new Irish legislation as an opportunity to investigate the relationship, if any, between this legal definition of mental incapacity and clinical assessment of mental incapacity using the MacCAT-T. To this end, we applied not only the MacCAT-T criteria to the 300 hospital inpatients in our study, but also the new legal definition in Ireland's 2015 Act in order to explore the similarities and differences between the clinical and legal assessments in the same patient cohort.

III Methods

This research was based in two general hospitals in Ireland, Tallaght University Hospital in Dublin (Ireland's capital city) and Midland Regional Hospital in Portlaoise (a large regional town in County Laois). Tallaght University Hospital is one of Ireland's largest acute teaching hospitals, with 620 beds, 12 theatres and 14 critical care beds in operation, it treats over 410,000 patients per year and employs almost 3,000 staff. The hospital comprises over 20 medical and surgical specialties, with inclusive on-site laboratory and radiology support services. It is also a national urology center, the second major provider of dialysis services in Ireland, and a regional orthopedic trauma center. Tallaght University Hospital is one of two main teaching hospitals of Trinity College Dublin.

Midland Regional Hospital, Portlaoise is a 152-bed acute hospital supplying the chiefly rural catchment areas of Laois, Offaly, Kildare, Carlow and Tipperary. Founded in 1936, it is part of the Dublin Midlands Hospital Group, an organization of interconnected hospitals in the eastern part of Ireland. The hospital's catchment area includes several regional towns as well as extensive rural areas.

We recruited patients into the study from January to October 2017. One urban and one rural hospital were included in order to minimize selection bias. Data collection was stratified by hospital ward in both hospitals, as specific wards tended to have specific types of patients (medical, surgical, elderly, intensive care, etc.). We identified patients from inpatient census lists and recruited patients from each hospital ward using random numbers (to minimize bias).

Inclusion criteria included being a medical or surgical inpatient in Tallaght University Hospital or Midland Regional Hospital, Portlaoise during the study period; aged 18 years or over; and proficient in the English language. The key outcome variables of interest were mental incapacity assessed using the MacCAT-T and mental incapacity assessed using the relevant criteria in the Assisted Decision-Making (Capacity) Act 2015. Therefore, all participants underwent capacity evaluations using these two sets of assessment criteria (the MacCAT-T and the 2015 Act). Other variables of interest, as potential confounders or effect modifiers, included gender, age, marital status, employment status, primary treating team (medical or surgical) and number of diagnoses, obtained from the patients' clinical files.

All assessments were carried out based on the patient's own diagnosis and the treatment they were receiving according to the records documented by their treating team. Once a patient consented to participate in the study, the researcher gathered the required information from their clinical file and identified the key treatment decision that the patient faced at that time.⁶ This decision was then used in order to assess mental capacity

⁶ Raymont V, Bingley W, Buchanan A, David AS, Hayward P, Wessely S, Hotopf M. Prevalence of mental incapacity in medical inpatients and associated risk factors: cross-sectional study. *Lancet* 2004; 364: 1421-7; Owen GS, David AS, Richardson G, Szmukler G, Hayward P, Hotopf M. Mental capacity, diagnosis and insight. *Psychological Medicine* 2008; 22: 1-22; Owen GS, Richardson G, David AS, Szmukler G, Hayward P,

in that patient using both the MacCAT-T and the legal criteria from the 2015 Act. We did not provide new information to patients about their diagnosis or treatment, but we worked with the information that each patient already had. We performed each mental capacity assessment with each patient in a standard, ordered fashion, exploring each element of each assessment in the same order with each patient. We were not involved in the care of any of these patients.

The MacCAT-T is a semi-structured interview that produces outcomes on four measures significantly related to mental capacity, where the higher each score, the greater the mental capacity: (1) understanding of the disorder and its treatment, including associated benefits and risks (rated from 0 to 6, containing three sub-scales, each rated from 0 to 2: understanding of the disorder, treatment and benefits/risks); (2) appreciation of the disorder and its treatment; i.e. how the patient comprehends how they could be specifically affected, (rated from 0 to 4, comprising two sub-scales, each rated from 0 to 2: appreciation of the disorder and appreciation of treatment); (3) reasoning, which evaluates the evolution of decision-making and the patient's ability to evaluate alternative options in view of their consequences (rated from 0 to 8, detailing four sub-scales, each rated from 0 to 2: consequential reasoning, comparative reasoning, generating

Hotopf M. Mental capacity to make decisions on treatment in people admitted to psychiatric hospitals: cross sectional study. *BMJ* 2008; 337: a448; Owen GS, Szmukler G, Richardson G, David AS, Hayward P, Rucker J, Harding D, Hotopf M. Mental capacity and psychiatric in-patients: implications for the new mental health law in England and Wales. *British Journal of Psychiatry* 2009; 195: 257-63; Owen GS, Szmukler G, Richardson G, David AS, Raymont V, Freyenhagen F, Martin W, Hotopf M. Decision-making capacity for treatment in psychiatric and medical in-patients: cross-sectional, comparative study. *British Journal of Psychiatry* 2013; 203: 461-7.

consequences and logical consistency); and (4) the ability to communicate a choice (rated from 0 to 2).⁷

The MacCAT-T is associated with a high degree of inter-rater reliability (ranging between 0.99 for ‘understanding’ and 0.87 for ‘appreciation’).⁸ The MacCAT-T does not provide an overall score for mental capacity (adding up the four sub-scales) because if a person scores very poorly on a single sub-scale, they can lack mental capacity for that reason alone despite having high scores on the three other sub-scales. Even so, some previous research studies have usefully analysed MacCAT-T total scores out of 20, not in order to determine a cut-off for mental capacity but for various other analytic reasons.⁹

In the present analysis, however, we chose not to use MacCAT-T total scores or binary *clinical* assessments of mental capacity but chose instead to compare scores on the four MacCAT-T sub-scales in patients who had mental capacity according to the 2015 Act with those who did not. We chose this methodology because the MacCAT-T remains the most validated tool in this field and using it in this way was most likely to provide a valid and robust examination of Ireland’s new legal definition of mental incapacity. Our study does not, therefore, present an overall correlation between mental capacity assessments using the MacCAT-T and legal criteria, but rather an assessment of whether or not patients with mental capacity according to the legal criteria also score highly on the four MacCAT-T sub-scales.

⁷ Grisso T, Applebaum PS. *MacArthur Competence Assessment Tool for Treatment (MacCAT-T)*. Sarasota, FL.: Professional Resource Press, 1998.

⁸ Grisso T, Applebaum PS, Hill-Fotouhi C. The MacCAT-T: a clinical tool to assess patients’ capacities to make treatment decisions. *Psychiatric Services* 1997; 48: 1415-9; ED Sturman. The capacity to consent to treatment and research: a review of standardized assessment tools. *Clinical Psychology Review* 2005; 25: 954-74.

⁹ Kolva E, Rosenfeld B, Brescia R, Comfort, C. Assessing decision-making capacity at end of life. *General Hospital Psychiatry* 2014; 36: 392-7

Our second assessment of mental capacity generated a binary outcome, based on the Assisted Decision-Making (Capacity) Act 2015 which states that ‘a person lacks the capacity to make a decision if he or she is unable (a) to understand the information relevant to the decision; (b) to retain that information long enough to make a voluntary choice; (c) to use or weigh that information as part of the process of making the decision; or (d) to communicate his or her decision (whether by talking, writing, using sign language, assistive technology, or any other means) or, if the implementation of the decision requires the act of a third party, to communicate by any means with that third party’ (Section 3(2)). Each of these four items was rated in a binary fashion (yes/no); if the patient received a ‘no’ on one or more of these four items, the patient lacked mental capacity according to the 2015 Act.

All assessments and scores were completed by a trained clinician with more than five years training in psychiatry and membership of the Royal College of Psychiatrists (RM), consistent with previous studies in this field.¹⁰ For additional quality control, there were joint assessments of 12 randomly selected patients with a second trained clinician with more than five years training in psychiatry and membership of the Royal College of Psychiatrists (AC). These joint assessments were aimed at further training raters in the MacCAT-T and legal assessments and enhancing consistency; complete agreement was reached in all joint cases. All assessments were further supervised by an additional trained assessor (BDK).

Sample size calculation based on current published comparable studies was impossible as this study does not utilize comparison across different groups and the

¹⁰ Owen GS, Szukler G, Richardson G, David AS, Rayment V, Freyenhagen F, Martin W, Hotopf M. Decision-making capacity for treatment in psychiatric and medical in-patients: cross-sectional, comparative study. *British Journal of Psychiatry* 2013; 203: 461-7.

mental incapacity criteria of the Assisted Decision-Making (Capacity) Act 2015 have never previously been used in quantitative studies. As a result, a sample size of 300 patients was selected based on sample sizes in previous studies.¹¹

Acquiring patient consent and conducting research among participants of questionable mental capacity is associated with substantial ethical difficulties. Such challenges are compounded by the fact that many countries lack relevant legislation or guidelines for research ethics committees in relation to research among persons who might lack mental capacity. England and Wales are a notable exception to this, owing to the research provisions of the Mental Capacity Act 2005 (Sections 30-34).

In order to obtain an accurate estimate of the prevalence of mental incapacity in hospital inpatients, all patients eligible to participate in the study had to be approached and invited to participate regardless of apparent level of mental capacity. Consequently, we formulated a detailed consent procedure as follows:

- Any patient (with or without mental capacity) who indicated in any way that he or she did not wish to participate was to be omitted from the study.
- We obtained written informed consent from patients with mental capacity to provide such consent. There is a legal presumption of mental capacity in Ireland, so it was only in cases where we had *prima facie* reason to believe that the patient lacked mental capacity to consent to the study that we could question the presumption of mental capacity to participate. An example of

¹¹ Raymont V, Bingley W, Buchanan A, David AS, Hayward P, Wessely S, Hotopf M. Prevalence of mental incapacity in medical inpatients and associated risk factors: cross-sectional study. *Lancet* 2004; 364: 1421-7.

this would be an unconscious, intubated, ventilated patient who is entirely unable to communicate.

- For patients who lacked mental capacity to consent to the study, we developed a next-of-kin/relative information leaflet and assent form, in order to obtain assent in this fashion from their next-of-kin or relative when feasible; i.e. when a next-of-kin or relative was named and available. On receiving such assent, we were to proceed with our assessments provided the patient assented and did not object at any point. In these cases, we were to seek 'deferred consent' if the patient regained mental capacity during the study period. If, on regaining mental capacity, any patient had declined to provide such 'deferred consent', we would have destroyed the data relating to that patient, but this circumstance did not arise in the study.
- For patients who lacked mental capacity to consent to the study and there was no next-of-kin or relative named or available, we proceeded with our assessments provided the patient assented and did not object at any point. If, on regaining mental capacity within the study period, any such patient had declined to provide such 'deferred consent', we would have destroyed the data relating to that patient, but this circumstance did not arise in the study.

Data were stored, described and analyzed using the statistical package. We generated a binary logistic regression model with mental capacity for treatment decisions (yes/no) as per the Assisted Decision-Making (Capacity) Act 2015 as the dependent variable. The independent variables were gender, age, marital status, employment status, current

primary treating team (medical or surgical) and number of diagnoses. We used the student *t*-test to compare scores on sub-scales of the MacCAT-T between patients who had mental capacity for treatment decisions according to the Assisted Decision-Making (Capacity) Act 2015 and those who did not. There were no missing data.

This study received ethical approval from the Tallaght University Hospital/St James's Hospital Joint Research Ethics Committee, Dublin, Ireland and the Health Service Executive (HSE) Midland Area Research Ethics Committee, Tullamore, County Offaly. This was a study of usual practice using existing routine data and administration of an interview to evaluate current mental health care practice. It was performed in accordance with appropriate data protection and research regulations and the Declaration of Helsinki.¹² Data were irrevocably anonymized, encrypted and stored on a password-protected research computer in a locked research office. Patient confidentiality was protected at all times

IV Results

Three hundred hospital inpatients (51.7% female) were randomly selected for inclusion in the study, stratified by location: 200 from the urban center and 100 from the rural setting. All eligible patients who were approached participated. Over 90% of participants provided consent to the research themselves at time of recruitment. The remainder lacked mental capacity to consent to the study at that time and, because none had relatives available to provide assent and none objected, we proceeded with our assessments as per

¹² World Medical Association. *WMA Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects*. Ferney-Voltaire: World Medical Association, 2008.

our consent protocol; no patient who regained mental capacity during the study period and was asked for ‘deferred consent’ declined to provide it.

Compared to patients who had mental capacity under the Assisted Decision-Making (Capacity) Act 2015 (72.3%), those who lacked such mental capacity (27.7%) were older, more likely to have never married, less likely to be employed outside the home, more likely to be medical rather than surgical inpatients, and more likely to have multiple diagnoses ($p \leq 0.001$ in all cases; multi-variable model $r^2=40.1\%$; Table 1).

Among the 83 patients (27.7% of the overall sample) who lacked mental capacity under the legislation, a majority (75.0%) met all four criteria for mental incapacity; i.e. they were unable to understand relevant information, retain it for long enough to make a decision, use the information and communicate a decision. Ten (11.9%) met three of the criteria for mental incapacity; seven (8.3%) met two; and four (4.8%) met one. Overall, 22.7% were unable to understand the information relevant to the decision; 27.0% were unable to retain it for long enough to make a decision; 26.7% were use the information; and 23.7% were unable to communicate their decision.

The mean total MacCAT-T score for the entire sample ($n=300$) was 14.80 (standard deviation [SD]: 8.40) and this was significantly higher among patients who had mental capacity according to the legislation compared to those who did not (19.89, SD: 0.60 versus 1.69, SD: 3.47; $t=47.749$, $P<0.001$). The total MacCAT-T score should not, however, be seen as a quantitative measure of mental capacity because if a person scores very poorly on a single MacCAT-T sub-scale, they can lack mental capacity for that reason alone despite possibly having a high overall score. However, patients who had mental capacity according to the legal criteria scored significantly higher on *all* sub-

scales of the MacCAT-T compared to those who did not have mental capacity according to the legal criteria (Table 2).

V. Discussion

We found that more than one quarter of all hospital inpatients (27.7%) lack mental capacity for treatment decisions and that mental incapacity is independently associated with greater age, having never married, not working outside the home, being a medical rather than surgical inpatient, and having a greater number of diagnoses.¹³

In the present analysis, we also found that patients who had mental capacity according to Ireland's new Assisted Decision-Making (Capacity) Act 2015 scored significantly higher on all sub-scales of the MacCAT-T compared to those who lacked mental capacity according to the legislation. This finding strongly supports the validity of Ireland's new definition of mental incapacity in the 2015 Act. This finding is especially interesting because Ireland's legislative criteria appear to focus a great deal on choice and understanding, and explicitly include *retention* of information in the criteria, unlike the MacCAT-T. The MacCAT-T, however, requires that the patient is able to appreciate the disorder and its treatment, and engage in reasoning, both of which, arguably, implicitly require retention of the information. As we did not ask additional questions during either the legislative or MacCAT-T assessments, however, the consistency of patients' performance across both assessments in our study suggests that, despite any apparent

¹³ Murphy R, Fleming S, Curley A, Duffy RM, Kelly BD. Who can decide? Prevalence of mental incapacity for treatment decisions in medical and surgical hospital inpatients in Ireland. *QJM* 2018; 111: 881-5.

differences between the two sets of criteria, both assessment methods overlap very substantially and produce very similar results.

Our multi-variable analysis also demonstrates significant, independent relationships between mental incapacity and greater age, having never married, not working outside the home, being a medical rather than surgical inpatient, and having a greater number of diagnoses. These findings suggest that supports provided to assist people in optimizing their mental capacity (e.g. advocates) should be focused on older, unmarried, medical patients who have not worked outside the home and have a greater number of diagnoses. Other patients should not, however, be neglected; while the factors in our multi-variable analysis accounted for 40.1% of the variance in mental capacity between individuals, they leave the majority of the variance (59.9%) unexplained. It is a matter for future research to identify the other factors underpinning the unexplained variance (e.g. level of education, pain, medication effects).

To our knowledge, this is the first study to compare assessments of mental incapacity based on a legal definition of mental incapacity (Ireland's 2015 Act) with assessments based on a structured clinical assessment (the MacCAT-T) in medical and surgical inpatients.¹⁴ Other strengths of our study include the facts that we sought to identify which MacCAT-T sub-scales were best reflected in the new Irish legal definition (and found close relationships between the legal definition and *all* sub-scales of the MacCAT-T); that this was the first quantitative study of mental capacity as defined in Ireland's new Assisted Decision-Making (Capacity) Act 2015; that we included both

¹⁴ For such a study in *psychiatry* inpatients, see: Curley A, Murphy R, Plunkett R, Kelly BD. Concordance of mental capacity assessments based on legal and clinical criteria: a cross-sectional study of psychiatry inpatients. *Psychiatry Research*, Epub ahead of print: <https://doi.org/10.1016/j.psychres.2019.05.015>.

urban and rural hospitals; and that our study is comparable in size with leading studies in the field.¹⁵

We also had a notably high rate of participation which is attributable to careful study design, very consistent support of the study by nursing staff on the relevant hospital wards, and our detailed, patient-focused consent procedure which was highly inclusive and which participating patients found very interesting and empowering.

We believe that the close relationships we identified between MacCAT-T subscales and the definition of mental incapacity in the Irish legislation have significant external validity owing to the fact that the four key elements in Ireland's legal definition of mental incapacity (understanding, retention, use of information, and communication) are highly consistent with those in other jurisdictions (e.g. England and Wales). As a result, our findings can be generalized to other jurisdictions with comparable legal definitions of mental incapacity.

There are a number of potential limitations to this study. Selection bias is always a consideration in a study such as this, although we minimized this possibility by conducting recruitment in two hospital locations (one urban, one rural), including both medical and surgical inpatients, developing our highly inclusive consent procedure, and random selection of hospital inpatients from each ward. However, as with many similar studies, residual selection bias (in any direction) remains a possibility. Bias may have also been introduced by the use of only one rater for all capacity assessments among the 300 study participants; this, however, had the advantages of optimizing consistency and replicating clinical situations in which it is common for the same physician to perform

¹⁵ Raymont V, Bingley W, Buchanan A, David AS, Hayward P, Wessely S, Hotopf M. Prevalence of mental incapacity in medical inpatients and associated risk factors: cross-sectional study. *Lancet* 2004; 364: 1421-7.

both clinical and legal assessments of mental capacity. Although it can be reasoned that this is not ideal clinical practice, it is the usual practice in Ireland and most other jurisdictions, and our study sought to reflect this reality.

Another potential limitation of this study includes the cross-sectional design, whereby we assessed mental capacity for treatment decisions at one time-point only. While this may be considered a possible shortcoming, this was nonetheless an intentional decision in order to facilitate study of the prevalence of mental incapacity among the entire hospital inpatient population at the given point in time. Even so, additional studies assessing mental capacity for decision making on a more longitudinal basis would be useful in the future.

The prevalence of mental incapacity (27.7%) in our work is similar to comparable studies among hospital inpatients in other countries.¹⁶ With over one quarter of all hospital inpatients lacking decision-making capabilities, there is a clear obligation on national governments and health authorities to develop and commence modern, fit-for-purpose mental capacity legislation.

Against this background, and based on our study findings, we have three key recommendations for practice. First, healthcare workers should be aware that mental incapacity for treatment decisions is common in hospitals and is especially associated

¹⁶ Raymont V, Bingley W, Buchanan A, David AS, Hayward P, Wessely S, Hotopf M. Prevalence of mental incapacity in medical inpatients and associated risk factors: cross-sectional study. *Lancet* 2004; 364: 1421-7; Sessums LL, Zembruska H, Jackson JL. Does this patient have medical decision-making capacity? *JAMA* 2011; 306: 420-7; Owen GS, Szukler G, Richardson G, David AS, Raymont V, Freyenhagen F, Martin W, Hotopf M. Decision-making capacity for treatment in psychiatric and medical in-patients: cross-sectional, comparative study. *British Journal of Psychiatry* 2013; 203: 461-7; Bilanakis N, Vratsista A, Athanasiou E, Niakas D, Peritogiannis V. Medical patients' treatment decision-making capacity: a report from a general hospital in Greece. *Clinical Practice and Epidemiology in Mental Health* 2014; 10:133-9; Lepping P, Stanly T, Turner J. Systematic review on the prevalence of lack of capacity in medical and psychiatric settings. *Clinical Medicine* 2015; 15: 337-43.

with older age, unmarried status, medical inpatients who have not worked outside the home, and patients who have a greater number of diagnoses.¹⁷ Supports provided to assist people in optimizing their mental capacity (e.g. advocates) should be focused on these groups in the first instance as they appear to have the greatest need for such assistance.

Second, the close relationship we identify in the present analysis between mental capacity rated using Ireland's Assisted Decision-Making (Capacity) Act 2015 and *all* four sub-scales of the MacCAT-T suggests that Ireland's new legal criteria are a valid and pragmatic way of assessing mental capacity for treatment decisions in day-to-day clinical practice. The MacCAT-T provides a more nuanced exploration of mental capacity which will undoubtedly prove useful in certain circumstances, but the legal criteria have the distinct advantages of concision and providing a binary outcome (i.e. indicating whether the patient has mental capacity or not).

Third, the high rate of mental incapacity (27.7%) identified in our studies highlights the importance of actually commencing Ireland's new Assisted Decision-Making (Capacity) Act 2015 in practice. The legislation has been passed by parliament and signed by the president but has not yet been commenced. Once commenced, the legislation will not only introduce the new definition of mental incapacity used in this study but will also provide new supports to optimize patients' mental capacity, such as decision-making assistants and co-decision-makers. Preparation for commencement is underway at present. Our findings highlight the need for implementation to proceed apace by highlighting the high prevalence of mental incapacity among hospital inpatients, validating the definition of mental incapacity in the Act, and identifying patients

¹⁷ Murphy R, Fleming S, Curley A, Duffy RM, Kelly BD. Who can decide? Prevalence of mental incapacity for treatment decisions in medical and surgical hospital inpatients in Ireland. *QJM* 2018; 111: 881-5.

particularly likely to require the important supports to be introduced in the new legislation.

Future research in this area could usefully seek to replicate these findings in Ireland after the 2015 Act is commenced and in other jurisdictions with similar legislation (e.g. England and Wales). There is also a need to identify the factors underpinning the unexplained variance in mental capacity between individual patients (e.g. level of education, pain, medication effects) and to conduct research with greater patient involvement in order to determine which elements of mental capacity patients struggle with the most and how they can be supported further in optimizing their mental capacity in the often challenging setting of inpatient hospital care.

Acknowledgements

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Table 1. Descriptive statistics for hospital inpatients in Ireland in whom mental capacity for treatment decisions was assessed. Values are numbers (percentages) unless stated otherwise.

Variables		All patients (n=300)	Mental capacity status as per the Assisted Decision-Making (Capacity) Act 2015		Binary logistic regression analysis of mental capacity status as per the Assisted Decision- Making (Capacity) Act 2015*	
			Has mental capacity (n=217)	Lacks mental capacity (n=83)	β	p
Gender	Women	155 (51.7)	111 (51.4)	44 (52.4)	-0.579	0.110
	Men	145 (48.3)	105 (48.6)	40 (47.6)		
Mean (SD) age (years)		70.2 (15.6)	68.0 (14.6)	75.7 (16.9)	-0.060	<0.001
Marital status	Never married	55 (18.3)	37 (17.1)	18 (21.4)	0.582	0.020
	Married	142 (47.3)	103 (47.7)	39 (46.4)		
	Divorced, separated or widowed	103 (34.3)	76 (35.2)	27 (32.1)		
Employment status	Employed outside the	143 (47.7)	122 (56.5)	21 (25.0)	-0.862	<0.001

	home					
	Works in the home	76 (25.3)	52 (24.1)	24 (28.6)		
	Unemployed	46 (15.3)	32 (14.8)	14 (16.7)		
	Other	35 (11.7)	10 (4.6)	25 (29.8)		
	Rural	100 (33.3)	74 (34.3)	26 (31.0)		
Primary treating team	Medical	187 (62.3)	120 (55.6)	67 (79.8)	1.255	0.001
	Surgical	113 (37.7)	96 (44.4)	17 (20.2)		
Number of diagnoses	One	158 (52.7)	131 (60.6)	27 (32.1)	-0.984	<0.001
	Two	118 (39.3)	78 (36.1)	40 (47.6)		
	Three or more	24 (8.0)	7 (3.2)	17 (20.2)		

Notes

* Binary logistic regression analysis of mental capacity for treatment decisions with mental capacity status (yes/no) as per the Assisted Decision-Making (Capacity) Act 2015 as the dependent variable; $r^2=40.1\%$; $p<0.001$.

Table 2. Relationship between mental capacity for treatment decisions assessed using (a) legislation (Ireland’s Assisted Decision-Making (Capacity) Act 2015) and (b) a semi-structured interview (MacArthur Competence Assessment Tool for Treatment). Values are numbers (percentages).

MacArthur Competence Assessment Tool for Treatment (MacCAT-T) scale	MacCAT-T sub-scale	MacCAT-T sub-scale scores (rated from 0 to 2, with higher scores indicating greater mental capacity)			Student <i>t</i> -test comparing MacCAT-T sub-scale scores in patients with and without mental capacity as per the Assisted Decision-Making (Capacity) Act 2015	
		All patients (n=300)	Patients with mental capacity as per the Assisted Decision-Making (Capacity) Act 2015 (n=216)	Patients without mental capacity as per the Assisted Decision-Making (Capacity) Act 2015 (n=84)	<i>t</i>	<i>p</i>
Understanding	Disorder	1.48 (0.84)	1.99 (0.07)	0.16 (0.34)	75.634	<0.001
	Treatment	1.47 (0.86)	1.98 (0.10)	0.13 (0.35)	71.120	<0.001
	Benefit/risks	1.45 (0.87)	1.98 (0.14)	0.08 (0.25)	81.640	<0.001
	Summary	4.39 (2.56)	5.95 (0.25)	0.40 (0.95)	79.497	<0.001
Appreciation	Disorder	1.53 (0.82)	1.99 (0.10)	0.33 (0.63)	37.712	<0.001

	Treatment	1.52 (0.83)	2.00 (0.00)	0.30 (0.62)	40.682	<0.001
	Summary	3.05 (1.64)	3.99 (0.10)	0.62 (1.16)	42.433	<0.001
Reasoning	Consequential	1.44 (0.88)	1.98 (0.15)	0.70 (0.30)	72.481	<0.001
	Comparative	1.44 (0.88)	1.98 (0.14)	0.06 (0.24)	87.841	<0.001
	Generate consequences	1.49 (0.85)	2.00 (0.00)	0.17 (0.41)	66.577	<0.001
	Logical consistency	1.48 (0.85)	1.99 (0.10)	0.18 (0.44)	56.866	<0.001
	Summary	5.86 (3.43)	7.95 (0.30)	0.46 (1.18)	86.719	<0.001
Expressing a choice		1.50 (0.85)	2.00 (0.00)	0.21 (0.52)	50.946	<0.001