THE UNIVERSITY OF QUEENSLAND

AUSTRALIA

Expanding Speech Pathology Delegation Practices: engaging Allied Health Assistants (AHAs) in dysphagia management in the acute hospital setting

Maria Angelika Schwarz

Bachelor of Speech Pathology (Honours, First Class)

A thesis submitted for the degree of Doctor of Philosophy at the University of Queensland in 2019, School of Health and Rehabilitation Science

Abstract (800/800)

Speech Pathologists (SPs) are under increasing workforce pressures as a result of an ageing population and greater prevalence of chronic conditions. Considering this increasing workforce demand, within the context of limited health resources, workforce flexibility such as the consideration of task delegation is increasingly being encouraged within the literature and government policy. Though the use of delegation models within speech pathology has received some attention, particularly in the management of paediatric speech and language disorders, there is a paucity of evidence to support the use of delegation models in dysphagia management. This presents a significant gap, as dysphagia management is an integral part of the SP's role in the inpatient hospital setting and accounts for a significant proportion of workload demand in that context.

Delegation of dysphagia related tasks to a trained Allied Health Assistant (AHA) offers a means to address increased workforce demand, while potentially improving workforce efficiency. Appropriate delegation of 'low value' tasks to another professional group may support the SP; to dedicate more time to high risk caseloads; increasing intensity of intervention; and contributing to quality and innovation initiatives. Hence the overall objective of this thesis was to generate new knowledge regarding the design, clinical implementation and evaluation of AHA delegation models in the clinical area of dysphagia management. Two specific aims were identified to achieve this. The first was to design, develop, implement and evaluate AHA delegation models for two key dysphagia related tasks, (mealtime observations and dysphagia screening), to establish accuracy and feasibility of task completion. The second aim was to evaluate

stakeholder perceptions regarding implementation of AHA delegation models in the clinical area of dysphagia. Three studies resulting in four manuscripts were conducted to achieve these aims.

Study 1 (Chapter 2) involved a mixed method design including a document review of 13 policy documents on AHA delegation and a survey of 44 speech pathology managers regarding current delegation models. Despite policy support for AHA delegation, and 77% of managers reporting that they used delegation models, only 26% of managers reported using delegation fairly often/very often in dysphagia management. To facilitate greater delegation, both document analysis and survey findings supported the importance of AHA training, however, the nature of training remained unclear. Chapter 2 therefore provides context for delegation in the clinical area of dysphagia by demonstrating both policy and stakeholder support.

While Chapter 2 demonstrated that emerging support exists for the delegation of dysphagia related tasks to trained AHAs, an evaluation of accuracy and validity of task completion in these models of care has not been undertaken. To address this evidence gap, two separate studies were conducted resulting in Chapters 3, 4 and 5. Chapter 3 involved a mixed method design to explore validity of AHA completed mealtime observations of 50 adult inpatients using a structured observation form. The results of this study identified that exact agreement between AHAs and SPs on the overall pass/fail criteria was high (94%). Where exact agreement was not achieved, the AHA had made a more conservative decision, thus still ensuring patient safety. Qualitative interviews conducted as part of the mealtime observation study (Chapter 3) identified that both SPs and AHAs perceived multiple positive personal and service benefits of delegated mealtime observations. High levels of agreement between the SP and the AHA were also identified in

Chapter 4 which utilised a prospective cohort study to examine feasibility and validity of AHA delegation in dysphagia screening. Validity testing in this study confirmed exact agreement between AHAs and SPs on overall pass/fail screening criteria for the first 51 patients to be 100%. Furthermore, the delegation of 'low risk' dysphagia screening to a trained AHA was identified to remove approximately 40% of these referrals from the SP's caseload. Thus, providing evidence to support improved efficiency in workforce management when introducing AHA delegation.

In Chapter 5 the perceptions of stakeholders regarding the implementation of delegated dysphagia screening was conducted. The service implementation experience was examined using the Consolidated Framework for Implementation Research (CFIR) analysis framework. Results of this study provided an overview of barriers and facilitators to implementation, which provide vital direction to future services wishing to introduce innovative models, such as AHA delegation in dysphagia management. Chapter 5 also highlighted variation between direct patient delegation and blanket delegation, which was explored in more detail in Chapter 6.

The final chapter of this thesis (Chapter 6) provided a summary of the thesis findings, limitations and areas for future research. In conclusion, delegation of dysphagia related tasks to trained AHAs is safe and effective and may provide opportunity for efficiency increases, cost reduction and workforce flexibility in the area of dysphagia management. While training provided for the tasks included in this thesis appeared adequate given the high agreement and accuracy of task completion, variation in context and delegation practices highlight areas of future research.

Declaration by Author

This thesis is composed of my original work, and contains no material previously published or written by another person except where due reference has been made in the text. I have clearly stated the contribution by others to jointly-authored works that I have included in my thesis.

I have clearly stated the contribution of others to my thesis as a whole, including statistical assistance, survey design, data analysis, significant technical procedures, professional editorial advice, financial support and any other original research work used or reported in my thesis. The content of my thesis is the result of work I have carried out since the commencement of my higher degree by research candidature and does not include a substantial part of work that has been submitted to qualify for the award of any other degree or diploma in any university or other tertiary institution. I have clearly stated which parts of my thesis, if any, have been submitted to qualify for another award.

I acknowledge that an electronic copy of my thesis must be lodged with the University Library and, subject to the policy and procedures of The University of Queensland, the thesis be made available for research and study in accordance with the Copyright Act 1968 unless a period of embargo has been approved by the Dean of the Graduate School.

I acknowledge that copyright of all material contained in my thesis resides with the copyright holder(s) of that material. Where appropriate I have obtained copyright permission from the copyright holder to reproduce material in this thesis and have sought permission from co-authors for any jointly authored works included in the thesis.

Publications Included in This Thesis

- Schwarz, M., Ward, E.C., Cornwell, P., Coccetti, A., Kalapac, N. (2019). Evaluating the feasibility and validity of using trained Allied Health Assistants to assist in mealtime monitoring of dysphagic patients. *Dysphagia. 34*(3), 350-359. DOI: https://doi.org/10.1007/s00455-018-9947-y(0123456789().,-volV)(0123456789().,-volV)
- Schwarz, M., Ward, E.C., Cornwell, P., Coccetti. A (2019, early online). Delegation models in dysphagia management: current policy, clinical perceptions and practice patterns. *International Journal of Speech Language Pathology,* DOI: https://doi.org/10.1080/17549507.2019.1632932

Submitted Manuscripts Included in This Thesis

- Schwarz, M., Ward, E.C., Cornwell, P., Coccetti, A., D'Netto, P., Smith, A., Morley-Davies, K. (2019). Exploring the validity and feasibility of using Allied Health Assistants to conduct dysphagia screening for low risk patients within the acute hospital setting. *Submitted to American Journal of Speech Language Pathology.*
- Schwarz, M., Ward, E.C., Cornwell, P., & Coccetti, A. (2019). Dysphagia screening using an Allied Health Assistant delegation model: service considerations for implementation. *Submitted to International Journal of Language and Communication Disorders.*

Other Publications During Candidature

1.1 Conference Abstracts (Oral Presentations Related to Thesis)

- Schwarz, M., Ward, E.C., Cornwell, P., Coccetti, A., Smith, A., D'Netto, P., Morley-Davies, K. (2019, March). Exploring Allied Health delegation models: can Allied Health Assistants conduct dysphagia screening? *Paper presented at Allied Health Metro South Showcase, Brisbane, Australia*
- Schwarz, M., Ward, E.C., Cornwell, P., Coccetti, A., Smith, A., D'Netto, P., Morley-Davies, K. (2019, June). Using Allied Health Assistants to conduct dysphagia screening in an acute hospital setting. *Paper presented at Speech Pathology Australia and New Zealand Conference, Brisbane, Australia*
- Schwarz, M., Ward, E.C., Cornwell, P., Coccetti, A. (2019, August). How can we better utilise our assistant workforce in speech pathology? *Paper presented at National Allied Health Conference, Brisbane, Australia*

- Schwarz, M., Ward, E.C., Cornwell, P., Coccetti, A., Kalapac, N. (2017, May). Current and future use of Allied Health Assistants in dysphagia management: a prospective study of meal time observation. *Paper presented at the Speech Pathology Australia National Conference, Sydney, Australia.*
- Schwarz, M., Ward, E.C., Cornwell, P., Coccetti, A., Kalapac, N. (2017, June). Expanding scope of Allied Health Assistants: the validity and reliability of AHA involvement in mealtime screening of inpatients with dysphagia. *Paper presented at the Health Practitioners Research Showcase, Brisbane, Australia.*
- Schwarz, M., Ward, E.C., Cornwell, P., Coccetti, A., Smith, A., D'Netto, P (2017, August). Strengthening and expanding the scope of practice for allied health assistants: the example of dysphagia screening. *Paper presented at the National Allied Health Conference, Sydney, Australia.*
- Schwarz, M., Ward, E.C., Cornwell, P., Coccetti, A. (2017, October). Use of Allied Health Assistants in dysphagia management. *Paper presented at the Health Round Table Conference, Adelaide, Australia.*
- Schwarz, M., Kalapac, K., Ward, E.C., Cornwell, P., Coccetti, A. (2016, October). Allied Health Assistants as an adjunct to speech pathology assessments in dysphagia management of adult acute inpatients. *Paper presented at the Metro South Hospital and Health Service, Allied Health Showcase, Brisbane, Australia.*

1.2 Peer Reviewed Articles (not related to thesis)

- Schwarz, M., Coccetti, A., Cardell, E., Hirst, T., Lyons, L. (2019, early online). A retrospective cohort study of complex feeding decisions: informing dysphagia decision

making through patient experiences. Accepted for publication in *Journal of Clinical Practice in Speech Language Pathology.*

- Schwarz, M., Coccetti, A., Cardell, E. (2019, early online). Clinical decision making for complex feeding decisions: a national survey of current approaches and perspectives. Accepted for publication in *Australasian Journal on Ageing.*
- Schwarz, M., Kwiecien, I., Coccetti, A., Cardell, E. (2018). The experience of implementing standardised mouth cares and a free water protocol in a metropolitan hospital rehabilitation unit. *Journal of Clinical Practice in Speech Language Pathology, 20*(3), 134-144
- Schwarz, M., Ward, E.C., Seabrook, M., Coccetti, A., & Whitfield, B (2018). Administration of Co-Phenylcaine Forte Nasal spray during nasendoscopy: implementing and evaluating this extended scope role for speech language pathologists. *Journal of Clinical Practice Speech Language Pathology, 20*(2), 70-76.
- Schwarz, M., Ross, J., Ward, E.C., & Semciw, A. (2018) Impact of thermotactile stimulation on speed and efficiency of swallowing: a systematic review. *International Journal of Language and Communication Disorders, 53*(4), 675-688.
- Ward, E.C., Elphinston, R., Wall, L., Schwarz, M., & Gordon, G. (2018). Research engagement and activity in an allied health workforce: insights into departmental and organisational strategies. *Journal of Allied Health, 47*(4), 265-274.
- Seabrook, M., Schwarz, M., Ward, E.C., Whitfield, B. (2017). Implementation of an extended scope of practice speech-language pathology allied health practitioner service- an evaluation of service impacts and outcomes. *International Journal of Speech Language Pathology, 21*(1), 65-74.

- Schwarz, M., Coccetti, A., Murdoch, A., Cardell, E. (2017). The impact of aspiration pneumonia and nasogastric feeding on clinical outcomes in stroke patients: a retrospective cohort study. *Journal of Clinical Nursing, 27*(1-2), e235-e241.
- Schwarz, M., Coccetti, A., Cardell, E., Murdoch, A., Davis, J. (2016). Management of swallowing in thrombolysed stroke patients: implementation of a new protocol. *International Journal of Speech Language Pathology, 19*(6), 551-561.

Contribution by Others

The PhD candidate was primarily responsible for the concept and design of the studies, gaining ethical approval, organising participant recruitment, collecting data, completing general data analysis and interpretation and preparing manuscripts for publication. However, significant contributions have been made by the following people to this thesis as a whole (and the publications listed as per contributions outlined below).

Professor Elizabeth Ward and Associate Professor Petrea Cornwell provided substantial support and assistance in formalising concept and design of each study, providing support and assistance in the analysis and interpretation of the data and providing critical appraisal and review of written documents. Mrs Anne Coccetti also provided clinical support to facilitate participant recruitment and operational support required for manuscript preparation, as well as providing practical suggestions regarding model of care development and application, as well as critical appraisal of written work. As per outline at the commencement of each chapter, other listed authors assisted in participant recruitment and review of written work of individual manuscripts, however, did not contribute significantly to this thesis overall.

To the best of my knowledge and belief, no person who has offered contributions consistent with the above has been excluded as an author. Persons who have contributed to the work but not to the level that constitutes authorship have been acknowledged in the text as appropriate.

Statement of parts of the thesis submitted to qualify for the award of another degree

No works submitted towards another degree have been included in this thesis.

Research Involving Human or Animal Subjects

The studies included within this thesis had ethical approval through the Human Research Ethics Committee within Metro South Hospital and Health Service or Griffith University. An expedited ethics approval was obtained at the University of Queensland for the purpose of completing this PhD. A copy of the ethics approval letters has been included in the thesis within the appendix.

The study which forms Chapter 2 of this thesis received ethical clearance from Griffith University Human Research Ethics Committee in 2017- GU Ref No:2017/086 (17/2/2017), UQ Ref No: 2017000270 (8/3/2017). The study which forms Chapter 3 received ethical approval from the Metro South Hospital and Health Service HREC. HREC/14/QPAH/509-SSA/14/QPAH/523 (19/11/2014)- UQ Ref No: 2017000290 (29/06/2017). The study which forms Chapter 4 and 5 received full ethics approval from the Metro South Hospital and Health Service Human Research Ethics Committee- HREC/15/QPAH/486-SSA/15/QPAH495 (30/8/2016) and UQ Ref No: 2017000269 (29/06/2017).

Acknowledgements

A heart-felt thank you goes initially to my wonderful supervisory team! Right from initial enrolment to final submission, my PhD journey would not have been possible without my two amazing supervisors- Professor Liz Ward and Associate Professor Petrea Cornwell. Their patience, expertise and advice have been invaluable. I have gained an enormous amount of knowledge, skills and practical experience from these two amazing mentors. I can't thank them enough for their generosity in sharing their skills, wisdom and expertise. I am truly grateful for the many rounds of insightful feedback and for their patience with my endless questions, emails and queries. You have inspired me with your exceptional knowledge and passion for speech pathology research and I look forward to working with you both on many projects in the future. I really cannot thank you enough.

Secondly, I wish to thank the University of Queensland for financially supporting my PhD studies and providing the facilities and resources required to undertake this enormous leap into the academic world. In addition, I would like to express my thanks to the Allied Health Professions Office of Queensland for awarding our research team my first competitive grant and setting me up for the research journey that led to my PhD. Further, I wish to thank my employer Metro South Hospital and Health Service and Logan Hospital for creating an environment where research and innovation are fostered and valued.

Thirdly, enormous thanks go to my wonderful Speech Pathology team, Allied Health Assistant and allied health colleagues at Logan Hospital. I cannot thank you enough for being supportive

of my journey, for listening to my PhD related rants, for finding and recruiting much needed participants and for being there on this journey with me. A specific thank-you to my wonderful managers Anne Coccetti and Marnie Seabrook, who have been instrumental in identifying practice gaps, being open to considering new practice models, being flexible in giving me time to write, supporting my research in the busy workplace and most importantly for believing that I could do this! Working full time throughout the PhD journey would not have been possible without your generous support and mentorship.

No research would be possible without the help of willing participants; therefore, I would like to express my warm thanks to all the patients at the study sites, the fantastic Allied Health Assistants throughout Queensland and my Speech Pathology colleagues within my workplace and throughout Australia who were willing to try something new and consented to participate in the projects included in this thesis. Your belief in innovation, willingness to commit to new ways of working and patience with the data collection process did not go unnoticed.

Finally, on a more personal note I wish to thank my wonderful partner, my family, friends and furry supporter (my dog) who encouraged me to take this next step in my academic career, listened to me when I had doubts and kept me on track.

Financial support

This thesis project had partial support from the Allied Health Professions Office of Queensland, who provided project funding for the study included as Chapter 3 and partial funding for the study included as Chapter 4.

Keywords

allied health assistants, dysphagia, delegation, acute, hospital

Australian and New Zealand Standard Research Classifications (ANZSRC)

ANZSRC code: 920201, Allied Health Therapies, 100%

Fields of Research (FoR) Classification

FoR code: 1199, Other Medical and Health Sciences, 100%

Table of Contents

List of Figures

List of Tables

1.3 Tables Included in Publication

1.4 Tables Included as Supplementary Material

List of Abbreviations

AHA- Allied Health Assistant

AHP- Allied Health Professional

CFIR- Consolidated Framework Implementation Research

CSE- Clinical Swallow Examination

CTI- Clinical Task Instruction

EAT-10- Eating Assessment Tool-10

ENT- Ear Nose Throat

FEES- Fibreoptic Endoscopic Evaluation of Swallowing

GDP- Gross Domestic Product

MTOT- mealtime observation tool

SLP- Speech Language Pathologist

SP- Speech Pathologist

TOR-BSST- Toronto Bedside Swallow Screening Test

USA- United States of America

VFSS- Videofluoroscopic Swallow Study

1 Chapter 1. Review of Literature

1.1 Overview of Thesis

Allied Health Professionals (AHPs) including speech pathologists (SPs) are under increasing workforce pressures as a result of an ageing population, greater prevalence of chronic conditions such as dysphagia, and greater consumer expectations regarding healthcare outcomes. Considering this increasing workforce demand, within the context of limited health resources, workforce flexibility such as the consideration of task delegation is increasingly being encouraged by the literature and government policy alike. Though delegation within the speech pathology profession has received some attention internationally, particularly in the management of paediatric speech and language disorders, there is a paucity of evidence to support the use of delegation models in dysphagia management. This presents a significant literature gap as dysphagia management has become a key component of the SP's role, particularly in the inpatient hospital setting and is likely to account for a significant proportion of the SP's workload demand. The primary aim of this thesis is therefore to demonstrate examples of safe and effective Allied Health Assistant (AHA) delegation in the area of dysphagia management, as a workforce management strategy in order to guide future implementation of this innovative workforce management approach. In addition, the thesis aims to provide an overview of the current policy and practice contexts of AHA delegation, as well as presenting facilitators and barriers to introducing new delegation practices within the clinical setting (acute hospital setting).

This initial thesis chapter aims to provide a review of the key literature relevant to the overall purpose of the thesis; which is to establish evidence to support the notion that AHA delegation in dysphagia management can be safe, reliable and effective if relevant training, resources and processes are introduced and maintained. In this introductory chapter, the initial sections provide the reader with an overview of current practices in the screening, assessment, diagnosis and management of dysphagia in the acute hospital setting from an Australian perspective. Following this, an overview of current practices and the challenges emerging in the clinical area of dysphagia management as a result of factors, such as an ageing population, increasing consumer expectations, increasing utilisation of health resources, and a growing population will be outlined. Alternative models of care including delegation to assistants will then be introduced as a possible mechanism to manage the demand on speech pathology services in the area of dysphagia management more efficiently and effectively. Known facilitators and barriers to implementing new delegation models are then discussed, as well as a summary of current available literature focusing on utilisation of AHAs in the speech pathology profession. Finally, the key gaps in the current evidence are presented, including limited understanding of the AHA's scope of practice and training requirements in the area of dysphagia. Key gaps are also detailed to provide an overview of factors limiting the increased utilisation of, and delegation to, AHAs in the speech pathology profession, particularly in the area of dysphagia management.

Following this introductory chapter, the subsequent chapters of the thesis outline a series of three studies which examined aspects of AHA utilisation in dysphagia management. These include a mixed methods study incorporating data from a national survey study and a policy

document review (Chapter 2), an evaluation of using AHAs in the process of mealtime monitoring of patients with dysphagia (Chapter 3), and one study implementing and evaluating AHAs in the process of dysphagia screening (Chapters 4 and 5). Throughout these chapters the importance of training to ensure accuracy and reliability of AHA task delegation is identified as a key theme, with potential variations in implementation context and method of delegation identified in Chapter 5. The final chapter in this thesis (Chapter 6) provides a summative discussion of the key findings of these investigations and provides insights into future research in the area of AHA roles in dysphagia care.

In summary, all AHPs are experiencing a time of increased workforce demand, which is unlikely to be sustainable within a cost restrictive system. In order to safely identify dysphagia, monitor its progression, and ensure appropriate management this thesis proposes the introduction of low risk dysphagia task delegation to well-trained AHAs. Through a series of studies this thesis presents a body of new evidence regarding current policy and practice for AHA delegation in dysphagia (Chapter 2), support for using delegation practices for tasks such as mealtime observation (Chapter 3) and dysphagia screening for low-risk patients (Chapter 4), as well as an overview of barriers and facilitators for introducing AHA delegation into the acute hospital setting (Chapter 5). The initial chapter introduces the reader to the current identification and management of dysphagia within the acute setting and provides an overview of the current drivers for AHA delegation, and the barriers and facilitators to increasing AHA delegation.

1.2 Impact of Dysphagia in the Acute Setting

Dysphagia is defined as an impairment in swallowing, which may occur at any of the three phases of the swallow (oral, pharyngeal and oesophageal) (Cichero & Murdoch, 2006; Logemann, 1998; Mankekar, 2015; Smith Hammond & Goldstein, 2006). Of particular clinical concern is the entering of food and fluids into the airway referred to as penetration if remaining above the level of the vocal cords, and aspiration if material passes below the level of the vocal cords (Logemann, 1998; Smith Hammond & Goldstein, 2006). Swallowing impairments may result from changes to the swallowing mechanism created by the effects of advanced age or can occur with a wide variety of aetiologies including congenital disorders, neurological conditions or structural changes/abnormalities (Logemann & Larsen, 2012).

Dysphagia is a common consequence of a number of medical conditions, as well as the normal ageing process (Coates & Bakheit, 1997; Martin-Harris et al., 2005; Meng, Wang, & Lien, 2000; Paranji, Paranji, Wright, & Chandra, 2017; Roden & Altman, 2013; Rofes et al., 2010; Sarabia-Cobo et al., 2016; Steidl et al., 2015). Given the variety of underlying conditions which may result in dysphagia, it may be classified as ‘acute onset’ or ‘chronic/progressive.’ Acute onset includes dysphagia as a result of stroke, head injury or surgical procedure, while chronic/progressive dysphagia can result from progressive neurological conditions such as Parkinson’s disease, and/or age-related changes with advanced age (Logemann & Pitts, 2013).

The prevalence and impact of dysphagia on inpatients admitted to the hospital setting is significant. In a study of National Hospital discharge data from the United States of America, which reviewed over 77 million acute hospital admissions, the number of admissions associated

with dysphagia was only 0.35%, however dysphagia was associated with a 40% increase in length of stay and a 13-fold increase in mortality if requiring dysphagia rehabilitation (Altman, Yu, & Shaefer, 2010). The following sections will provide an overview of the medical, operational and economic impacts of dysphagia in the acute hospital setting.

1.2.1 The "acute care" health setting.

Public healthcare in Australia is managed by each state or territory and funded by the federal budget (Australian Government Department of Health, 2017). Services are generically identified as either 'acute care' which is usually defined as care provided as an inpatient in a hospital, or 'primary care' which is considered to be care provided at home, as an outpatient or in the community (Consumers Health Forum Australia, 2018). Utilisation of the health services is significant, with 30 million days of admitted patient care provided by Australian Hospitals (both public and private) in a 12-month period between 2015 and 2016 (Australian Institute of Health and Welfare, 2017). As per the Australian Institute of Health and Welfare report 'Admitted Patient Care 2015-16' (Australian Institute of Health and Welfare, 2017), 48% of patient days were recorded for patients 65 and older, with public hospitals providing the majority of services for medical admissions (73%) and emergency admissions (92%) (Australian Institute of Health and Welfare, 2017). In a study of emergency department demand between 2000 and 2001, 2009 and 2010 the demand for public emergency department care in Australia increased by 37% over the individual time periods which reportedly exceeded general population growth (Fitzgerald et al., 2012). Therefore, there appears to be significant evidence supporting a growing demand on public health services in the Australian context.

The effects of an older population are likely to have significant impacts on increased hospital utilisation. A combination of factors including declining fertility and mortality, as well as the 'baby boom' generation reaching retirement age have contributed to a significant ageing of the Australian population (Ofori-Asenso et al., 2018). The Australian Bureau of Statistics reports that the population between the ages of 65-84 has increased on an average annual rate of 2.03%, while the population of people aged 85 and older has increased 4.66% annually (Australian Bureau of Statistics, 2010). Using Australian Bureau of Statistics data Schoefield and Earnest (2006) presented a model of projected hospital demand by 2050. This study predicted that public demand for hospital bed-days was likely to grow faster than population growth, with an increase of up to 70% in proportion of bed-days taken by older individuals (Schoefield & Earnest, 2006). The cost of healthcare per person increases with age, with Australian health expenditure for individuals aged over 85 reported to be almost twenty times greater than youths (Australian Institute of Health and Welfare, 2016). This shift has resulted in a greater percentage of health expenditure by the Australian government compared with Gross Domestic Product (GDP) (increasing from 6.5% to 9.7% between 2013 and 2014 alone) (Australian Institute of Health and Welfare, 2016). As utilisation of public hospital services increases, and greater propensity for admitted patients to be older, this increases the likelihood of morbidity such as dysphagia being identified in the inpatient hospital (acute care) setting. This requires a shift in focus to managing chronic conditions, preserving function, and ensuring quality of life in older adults (Mangin, Sweeney, & Heath, 2007).

In the State of Queensland Australia, where this research was set, growing demand in health service utilisation is being experienced. The Australian Bureau of Statistics reports that

20% of the Australian population lives in Queensland (Australian Bureau of Statistics, 2015), making health services in Queensland one of the biggest providers of health care. The primary provider of public healthcare throughout the State of Queensland is the entity known as Queensland Health. The challenge in the Queensland Health context is to meet the increasing demands for services and rising costs due to increased patient numbers with chronic disease, an older population and increasing community expectations (Queensland Health, 2014). Between 2013 and 2014, 12.6% of Queenslanders were admitted to hospital (Australian Bureau of Statistics, 2015). A total growth rate in emergency department presentations in Queensland was reported at 35% between 2001 and 2010 (Fitzgerald et al., 2011). This thesis will focus on healthcare provided in the acute hospital setting, provided within the Queensland public health service 'Queensland Health.' As highlighted above, Queensland Health is one of the largest providers of healthcare in Australia, and therefore while the scope of this thesis may be considered restricted to one context, it is likely that results identified within this setting are transferrable to other health services throughout Australia, and potentially internationally.

1.2.2 Prevalence of dysphagia in acute care.

Prevalence of dysphagia varies depending on age, disease process and population type. Even in the general population, a Dutch study of 2600 individuals identified self-reported symptoms of dysphagia to be as high as 12% (Kertscher, Speyer, Fong, Georgiou, & Smith, 2015). This study also incorporated a literature review component of dysphagia prevalence in the general population, which suggested prevalence variation between 2.3 to 16% based on six included studies (Kertscher et al., 2015). However, prevalence and epidemiological data for dysphagia is highly influenced by selected study population, definition of dysphagia, selected

outcome measures and assessment methodology including considerations of screening versus objective assessment as described in Section 1.3. This variation makes prevalence difficult to determine, with possible under identification due to significant variations in terminology and assessment methods.

Of patients admitted to hospital, 3% of inpatients in the United States of America were diagnosed with dysphagia during their admission (Patel et al., 2018). This figure is much higher than the 0.35% figure reported from a sample taken from the National Hospital Discharge Survey within the United States of America between 2005 and 2006 (Altman et al., 2010). Importantly though it is acknowledged that the 3% figure may still be a gross underestimation of the actual number of patients due to possible presence of subclinical dysphagia or errors in documentation and coding (Patel et al., 2018). In a large population study conducted within hospital services, the most common dysphagia related diagnoses on admission were fluid and electrolyte disorder, diseases of the oesophagus, stroke, and aspiration pneumonia (Altman et al., 2010). Patel and colleagues (2018) similarly identified that dysphagia was most common in cases of septicaemia, intracranial haemorrhage or stroke, admission for rehabilitation, respiratory infections or digestive disorders.

As demonstrated in large scale analyses (Altman et al., 2010; Patel et al., 2018) the overall prevalence of dysphagia in the hospital setting is high, however prevalence of dysphagia in particular clinical populations that are prevalent within the acute care setting may be higher. For example in the stroke population rates of up to 50% are reported (Guyomard et al., 2009) with the prevalence of dysphagia reported as high as 80% in brain stem lesions (Meng et al.,

2000). Other neurological conditions report prevalence of dysphagia at 32% in participants with Parkinson's disease (Walker, Dunn, & Gray, 2011) and between 84% to 100% in certain patient populations managed for head and neck cancer (Airoldi et al., 2011; Ward, Bishop, Frisby, & Stevens, 2002). A prospective cross-sectional survey study of 117 seniors identified that 38% of responders developed a swallowing problem at some stage, with most reporting sudden onset with persistent problems particularly with taking longer to eat, coughing or choking during meals or a globus sensation (Roy, Stemple, Merrill, & Thomas, 2007). Similarly, a study of 262 patients in three geriatric units identified that 43% of elderly patients reported dysphagia (Saume et al., 2012). These high incidence and prevalence rates of dysphagia within an ageing population has been reported in several studies (Roy et al., 2007; Smithard, 2016) and is therefore likely to impact the prevalence of dysphagia in the acute hospital setting. Overall, prevalence of dysphagia in the hospital population is observed to be highly variable within the literature dependent on patient population, dysphagia definition and assessment methodology. As acknowledged by Patel and colleagues (2018) there is a risk of under-identification due to sub-clinical symptoms and poor documentation and reporting frameworks.

1.2.3 Clinical implications and costs of dysphagia in acute care.

While dysphagia is in-itself a complication of conditions such as stroke, it may also result in additional medical, psychological and economic complications which can impact on a patient's morbidity and mortality, clinical outcomes, and discharge planning. The early identification and appropriate management of dysphagia within the hospital setting is vital to reduce the risk of complications such as infection (Langdon, Lee, & Binns, 2008; Perry & Love, 2001; Ueda, Yamada, Toyosato, Nomura, & Saitho, 2004), distress, malnutrition and

dehydration (Foley, Martin, Salter, & Teasell, 2009), as well as the long term cost of complications to both the individual and the health service (Altman et al., 2010; Bonilha et al., 2014). Therefore, in the acute hospital setting the focus of dysphagia management is largely the prevention of secondary complications.

Unmanaged complications of dysphagia can have significant and devastating effects on patient morbidity and mortality, as well as on operational outcomes such as length of stay and discharge destination. A large study of 12,276 patients post stroke identified that patients with dysphagia had longer hospital stays, increased risk of pneumonia, increased fatality rates and increased disability at discharge, with higher rates of mortality and disability continuing three months post discharge (Al-Khaled et al., 2016). Further, the mean length of hospital stay for patients with dysphagia is reported to be 8.8 days, compared to 5 days in non-dysphagic individuals (Leow, Huckabee, Anderson, & Beckett, 2010), or a 40% increase in other studies (Altman et al., 2010). Patients with dysphagia post stroke are also identified as being less likely to be discharged home, and more likely to be discharged to a care facility (Bonilha et al., 2014; Patel et al., 2018), which may contribute to long term institutional cost. Specifically, Patel and colleagues (2018) identified that 33% more cases with dysphagia were transferred to post-acute facilities rather than being transferred home. Therefore, in the acute hospital setting the focus on early assessment and intervention for dysphagia has received priority as awareness increases regarding the clinical complications of dysphagia, which may be prevented with appropriate management.

The financial cost of dysphagia is a significant factor in the provision of acute health services, with ongoing budget restrictions making cost minimisation paramount. The cost of admission for patients with dysphagia is consistently higher than patients without dysphagia, with total inpatient cost of admission reported to be on average $6243 US dollars higher than those without a diagnosis of dysphagia (Leow et al., 2010; Patel et al., 2018). A recent systematic review identified this cost to be even higher reporting a mean attributable cost of dysphagia of $12,715 US dollars, a 40% increase in comparison to patients without dysphagia (Doeltgen, Attrill, White, Murray, & Hammond, 2018). Similarly, in a study of 258 older patients, adjusted annual hospital costs for patients with dysphagia was $4282 US dollars greater than patients without dysphagia (Westmark, Melgaard, Reithmeier, & Ehlers, 2018). This increase in cost for patients with a diagnosis of dysphagia is still observed 1 year post in the stroke population, with a reported $4510 increase in Medicare cost (Bonilha et al., 2014).

Medical complications such as respiratory infections may also result from unmanaged dysphagia. Aspiration pneumonia is a common complication of untreated dysphagia (Langdon et al., 2008; Langmore, Skarupski, Park, & Fries, 2002; Perry & Love, 2001; Ueda et al., 2004). Aspiration pneumonia is broadly defined as clinical findings of pneumonia (such as fever, cough, respiratory symptoms and consolidation) with the addition of witnessed aspiration or risk factors of aspiration (Reza Shariatzadeh, Huang, & Marrie, 2006; Terpenning et al., 2001). A systematic review of 21 publications identified a positive predictive relationship between aspiration pneumonia and dysphagia (van der Maarel-Wierink, Vanobbergen, Bronkhorst, Schols, & de Baat, 2011). Similarly, a study of 9930 older adults using logistic regression analysis identified that risk factors associated with aspiration pneumonia included a deterioration in the patient's

swallow function in the previous 3 months (Manabe, Teramoto, Tamiya, Okochi, & Hizawa, 2015). Aspiration is reported to be the most common form of hospital acquired pneumonia, with an incidence of 4 to 8 in every 1000 patients reported in the United States of America (Pikus et al., 2003).

Malnutrition is also known to be a common complication of dysphagia. In a recent study of 234 older adults admitted to hospital, dysphagia risk was identified as a significant predictor of malnutrition, with 46.6% of individuals being at risk of malnutrition and 26.9% being malnourished (Chatindiara et al., 2018). In a systematic review of eight studies of outcomes following stroke, the odds of being malnourished were identified to be higher in patients presenting with dysphagia than those with normal swallow patterns (Foley et al., 2009). Further a study of patients over 60 identified that individuals with dysphagia had significantly lower body mass index scores than patients without dysphagia (Westmark et al., 2018). Dysphagia itself may result in malnutrition (Foley et al., 2009; Langmore et al., 2002; Serra-Prat et al., 2012), however its complications such as aspiration pneumonia have been demonstrated in a systematic review to also positively correlate with further negative outcomes such as malnutrition (van der Maarel-Wierink et al., 2011).

The impact of dysphagia is however not limited to medical complications. Social isolation and depression have been reported as personal complications of dysphagia (Ekberg, Hamdy, Woisard, Wuttge–Hannig, & Ortega, 2002; Jacobsson, Axelsson, Österlind, & Norberg, 2000; Lai, Studenski, Duncan, & Perera, 2002; Langmore, 1999). For example a study of 360 patients with subjective dysphagia complaints identified that only 45% of responders considered

eating to be an enjoyable experience, 41% experienced anxiety during mealtimes, 36% reported avoiding eating with others (Ekberg et al., 2002). Similarly a study of 32 participants with Parkinson's disease identified that almost a quarter of participants reported their swallowing problems impacted on their ability to socialise and eat in public (Leow et al., 2010). Individuals recovering from dysphagia, for instance following stroke also face a number of personal and emotional challenges including dealing with the slow and uncertain recovery, managing changing social relationships and coping with concerns regarding social exclusion, due to the central role of eating in social relationships and maintaining perceptions (Moloney & Walshe, 2018).

Therefore, particularly in the acute setting where the medical model focuses on prevention of complications and minimising the risk of mortality, careful assessment and management is paramount in reducing risk of adverse clinical events. Unmanaged dysphagia can result in medical complications, as well as personal and financial cost to both the individual and the health service (Altman et al., 2010; Bonilha et al., 2014; Davenport, Dennis, Wellwood, & Warlow, 1996; Guyomard et al., 2009; Katzan, Cebul, Husak, Dawson, & Baker, 2003). Careful assessment and management of dysphagia is therefore required to reduce the risk of adverse outcomes and minimise cost and bed pressures in the acute hospital setting.

1.2.4 Increasing referral rates for dysphagia management in the acute care setting.

As already discussed, Australia is experiencing a period of increasing demand on allied health services due to an ageing population, a higher burden of chronic disease, increased consumer expectations, and a rise in disposable incomes. An ageing population is likely to result

in higher referral rates to all AHPs, with a likely increase in the risk of dysphagia thus increasing referral rates to SPs in particular. A study by Leder and Suiter (2009) looking at 4038 referrals noted that 70% of referrals received for swallow evaluation were for patients over the age of 60. In a study of 134 medical inpatients, 55% of patients aged over 84 years presented with clinical signs of dysphagia (Cabre et al., 2010). This trend is also reflected in a more recent study by Leder, Suiter, Agogo, and Cooney (2016) analysing 1348 referrals and 961 patients over the age of 60, which identified that overall referral rates for swallow evaluations increased an average of 63%, between 2007 and 2014 in the older population. Thus, in line with broader healthcare trends, it is reasonable to assume that the demands on SPs in the area of dysphagia management are likely to increase in the coming years.

Particularly in the acute care setting, evidence supports the assumption that assessing and managing dysphagia is a dominant component of speech pathology services (American Speech and Hearing Association, 2002; Armstrong, 2003; Code & Heron, 2003; Enderby & Petheram, 2002; Martino, Pron, & Diamant, 2004; Mustaffa-Kamal, Ward, & Cornwell, 2012) . Studies also suggest that dysphagia management has taken on an increased focus within the acute care setting over the more traditional roles of the SP in the assessment and management of communication impairments (Armstrong, 2003; Code & Heron, 2003; Enderby & Petheram, 2002; Foster, O'Halloran, Rose, & Worrall, 2016). One study reported an increase in referral numbers to speech pathology of over 190% between 1987 and 1995, with a 40 fold increase for dysphagia referrals and only a 2 fold increase in referrals for communication disorders (Enderby & Petheram, 2002). Similarly, a survey study of 264 managers and directors of speech pathology services in the United Kingdom identified that 53% of respondents reported their staff worked

with dysphagia caused by neurological damage, compared to only 25% who worked with aphasia (Code & Heron, 2003). Similarly in a survey study comparing caseloads between Malaysian and Australian SPs, 75% of the SP respondents working in acute care within the specific health services studied, reported that dysphagia management was a significant part of their adult caseload (Mustaffa-Kamal et al., 2012). Therefore, as the focus on dysphagia management increases, the workload of the SP is impacted within the acute hospital setting, increasing the need to consider other models of care to help meet increasing caseload demands for dysphagia assessments.

As increased patient prioritisation is required to meet service demands, a number of authors have reported the impact of increasing dysphagia referrals on the ability of the SP to provide more traditional services such as the assessment and treatment of speech and language deficits, particularly in the acute phase (Code & Heron, 2003; Enderby & Petheram, 2002; Lalor & Cranfield, 2004; Lawrie, 1996). A study of 159 patients (68 of whom were diagnosed with aphasia) admitted with a diagnosis of stroke identified that only 25% (n=13) received communication therapy due to speech pathology workload demands in the acute hospital setting (Lalor & Cranfield, 2004). This reflects a pattern in which increasing time spent working with dysphagia sees the percentage of time working with communication impairments decrease (Code & Heron, 2003). The increase in workload is also reflected subjectively in analysis of semi-structured interviews with 60 SPs who reported staffing shortages, difficulty achieving work/life balance and having inadequate resources to manage caseload demands as negative aspects of working as a SP (McLaughlin, Lincoln, & Adamson, 2008). Delegation to other team members

such as nursing staff has therefore become part of speech pathology practice, in an attempt to meet growing patient demands and ensuring patients requiring speech pathology intervention are accurately identified and managed.

1.2.5 Summary.

Prevalence of dysphagia in the acute hospital setting is high and is likely to increase as the demographic of admitted patients changes (due to increased chronic conditions and an ageing population) and the demand on health services continues to grow. The impact of dysphagia on patient outcomes, healthcare costs, psychological functioning and discharge planning cannot be underestimated. Therefore, dysphagia is a clinical complication that warrants close monitoring, early assessment and evidence-based management to prevent negative consequences. As the demand on health services grows, the demand and referral rates to speech pathology have increased. This increase in referral rates and increased complexity of referrals has impacted services and altered the distribution of services to predominantly focusing on dysphagia as opposed to other issues within acute care. As a result, new models of care and methods for managing dysphagia services need to be considered.

1.3 Assessment of Dysphagia in the Acute Setting

In the Australian healthcare system, dysphagia management in the acute setting occurs in a variety of settings including general medical wards and the intensive care unit (Gonzalez-Fernandez et al., 2013). It is generally considered a multi-disciplinary practice, as evidenced by a survey of 154 SPs that identified that the majority of respondents worked primarily with dysphagia in a multi-discliplinary context (Rumbach, Coombes, & Doeltgen, 2017). The first

step in dysphagia management is the process of assessment. Assessment of dysphagia in the acute care context is typically divided into a screening phase which identifies the presence or absence of dysphagia risk, a clinical assessment by a specialist professional (usually the SP), and a diagnostic or instrumental assessment as indicated (Cichero & Murdoch, 2006; Logemann, 1998; Mankekar, 2015, Speech Pathology Australia, 2004). SPs in the majority of settings globally are the primary health professional responsible for assessing and managing dysphagia (America Speech and Hearing Association, 2002; Smith Hammond & Goldstein, 2006; Speech Pathology Australia, 2004).

1.3.1 Components of dysphagia assessment.

Speech pathology dysphagia practice focuses primarily on the clinical and instrumental assessment of swallowing. Regarding assessment practices, recent research has shown that clinicians within Australia predominantly use a clinical swallow examination (CSE) and then, of the instrumental assessments, they most often conduct a videofluoroscopic swallow study (VFSS), with lesser use of fiberoptic endoscopic evaluation of swallowing (FEES) (Rumbach et al., 2017). Routine dysphagia screening was reported to be utilised it appoximately 48% of workplaces, with dysphagia screening being predominently completed by nursing and medical staff (97%) particularly in neurological caseloads (Rumbach et al., 2017). With the increasing demands for dysphagia services having had an impact on speech pathology workloads, there has been active consideration of other models to help with the early identification process for dysphagic patients. This has led to active engagement of other health professionals to assist with initial dysphagia screening, as well as assistance for more time intensive dysphagia monitoring strategies, such as mealtime observation which will be discussed further in section 1.3.1.4. In the

following sections discussion of speech pathology practices for dysphagia assessment, including screening, the CSE, instrumental assessments, mealtime monitoring, and finally patient reported measures are outlined.

1.3.1.1 Dysphagia screening.

In the clinical setting, the aim of dysphagia screening is to provide a pass/fail result which identifies possible risk of dysphagia in the patient population. As such it provides limited information regarding the severity, physiology or cause of dysphagia and therefore cannot be used in isolation as an assessment method (Bours, Speyer, Lemmens, Limburg, & De Wit, 2009; Martino, Pron, Diamant, 2000). Screening is quick, non-invasive and any specific tools used to structure dysphagia screening should provide reliable results (Bours et al., 2009). A number of swallow screening methods have emerged in the literature, particularly with patients post stroke or neurological deficits. Regardless of the exact methods (discussed further below) early dysphagia screening allows fast and simple identification of patients who are at risk of dysphagia and initiates further dysphagia management strategies (usually a referral to the SP).

The benefit of early dysphagia screening has been demonstrated in several studies (Bray et al., 2016; Hines et al., 2016; Sorensen et al, 2013). A large-scale study of 63,650 patients admitted with acute stroke in the United Kingdom identified that delays in swallow screening and assessment of dysphagia post stroke were associated with higher risk of complications such as pneumonia (Bray et al., 2016). Similarly, a controlled trial of 146 stroke patients identified a 21% decrease in verified pneumonia in patients who underwent early dysphagia screening using the Gugging Swallow Screen in addition to intensified oral hygiene, compared to those who did

not receive an early swallow screen (Sorensen et al., 2013). This is supported by a systematic review of 15 studies which identified that nurse-initiated dysphagia screening is effective in reducing chest infection (Hines et al., 2016).

1.3.1.1.1 Dysphagia screening tools.

As discussed previously, swallow screening is not a diagnostic tool and refers most commonly to a brief swallow trial using water (Antonios et al., 2010; Bours et al., 2009; Cichero, Heaton, & Bassett, 2009; DePippo, Holas, & Reding, 1992; Perry & Love, 2001; Smith et al., 2000; Speyer, 2013; Suiter & Leder, 2008; Trapl et al., 2007). A number of screening tools are available (Bours et al., 2009; Daniels, Anderson, & Wilson, 2012; Kertscher, Speyer, Palmieri, & Plant, 2014; Speyer, 2013) and are used to identify if a patient is 'safe' or 'not safe' to swallow (Smithard, 2016) providing an overall indication of presence or absence of dysphagia risk. However, while the benefits of screening are supported in the literature, determining which screening tool to use in certain clinical situations remains open to debate. While a large number of screening tools exist many of the existing measures have issues with validity or reliability as detailed in a number of systematic reviews (Bours et al., 2009; Daniels et al., 2012; Jiang, Fu, Wang, & Ma, 2016; Kertscher et al., 2014). Difficulty in identifying the validity and reliability of individual screening tools is also increased as several authors have included the CSE assessment as a 'screening tool', thus losing clarity of screening versus CSE.

Screening tools which utilised only a single clinical feature or patient history were found to reduce sensitivity and specificity, while tests which included a water swallow test appeared to have improved accuracy (Bours et al., 2009; Daniels et al., 2012). A systematic review of 22

studies including a water swallow component to screening procedure, identified that the water swallow test, particularly when administered with larger volumes of water, was accurate in identifying overt aspiration in a pooled sample of over 4000 patients (Brodsky et al., 2016). Conducting a critical review of all screening tools is beyond the scope of the current thesis and we refer the reader to other recent publications which have reviewed screening tools (Bours et al., 2009; Brodsky et al., 2016; Daniels et al., 2012; Kertscher et al., 2014; Speyer, 2013). However, in the following paragraphs a summary of three of the more widely used screening tools that were considered when designing the current research projects is provided. All included a water swallow component, had reported validity and reliability data and other factors which warranted their consideration when designing and planning the current research.

The Australian National Stroke Foundation (2017) recently included the Gugging Swallow Screen as one of its approved tools in the stroke population, suggesting high clinical applicability. The Gugging Swallow Screen involves two parts (1) a preliminary assessment or indirect swallow test which involves observing for saliva swallows, and (2) direct swallow test involving three consistencies starting with semisolid, then liquid and finally solid textures (McCullough et al., 2001; Smith et al., 2000; Trapl et al., 2007). Observations are made throughout regarding the success or delay of the swallow, the presence of a cough or drooling and the presence of voice changes post swallow (McCullough et al., 2001; Smith et al., 2000; Trapl et al., 2007). A study involving a 20 patient sample demonstrated a high predictive value (0.77) for aspiration risk using the Gugging swallow screen when compared to FEES (Trapl et al., 2007). A systematic review performed by Bours and colleagues (2009) suggested it had adequate psychometric properties, with the advantage of observing patients with solids.

However, as a screening tool it may be inappropriate given the amount of time needed to complete and test materials involved (Bours et al., 2009). For these reasons, despite its advocated use within Australian stroke services this tool was not seen as a viable tool for the current screening models to be explored within the studies of this thesis.

The second tool actively considered by the research team as a screening tool to use within the current research was the Toronto Bedside Swallow Screening Test (TOR-BSST). This screening tool includes a two-step process with the first being a screen for abnormalities in voice quality and tongue movement and the second step observing the patient swallow ten boluses of thin fluids, each consisting of one teaspoon (Kertscher et al., 2014; Martino et al., 2009). A pass/fail criteria is used to identify any concerns (Kertscher et al., 2014; Martino et al., 2009). It was trialled on a cohort of 311 stroke patients and identified to have excellent validity with sensitivity at 91.3% and negative predictive values at 93.3% however only 20% of the cohort was assessed using an instrumental swallow assessment (VFSS), therefore potentially limiting screening accuracy (Martino et al., 2009). This tool is also currently endorsed by the Australian National Stroke Foundation (2017). However, while the utilisation of standardised training as part of using the TOR-BSST increases the potential for consistent and valid application, this does raise issues of cost and practical application. In addition, the TOR-BSST is under copyright and therefore requires a significant financial commitment to allow for lengthy staff training and the use of developed resources. Finally, as the TOR-BSST is currently validated only in the stroke population there is some limitation to its application in other cohorts. For these reasons, despite its acknowledged strengths this tool was not deemed the best fit for the studies undertaken in the current thesis.

The third tool considered was the Yale Water Swallow Protocol (Suiter & Leder, 2008, 2014; Suiter, Sloggy, & Leder, 2012). A detailed description of the tool can be found in Suiter and Leder (2014). The complete protocol includes an exclusion criterion (including a brief cognitive screen and oral mechanism exam), followed by a 3-ounce water swallow challenge (Suiter & Leder, 2008, 2014; Suiter, Sloggy, & Leder, 2012). The 3 ounce water challenge requires the patient to drink three ounces of water steadily without stopping (DePippo et al., 1992). A fail on the Yale Water Swallow Protocol is recorded if the patient has any identified risks on the exclusion criteria and demonstrates 'interrupted drinking, coughing or choking during or immediately after completion of drinking'(Suiter & Leder, 2014). Researchers report high sensitivity (between 96.5% and 100%) for predicting aspiration when compared with instrumental swallow assessment, as well as identifying that the Yale Water Swallow Protocol is a good predictor of a patient's ability to tolerate solids (Suiter & Leder, 2008; Suiter, Sloggy, & Leder, 2012). Clinically, the Yale Water Swallow Protocol is quick to administer, requires little training to complete and has demonstrated adequate predictive values, in addition it utilises a water swallow component which has been identified as vital in determining dysphagia risk (Bours et al., 2009). Due to it's easy to use format, simple pass/fail criteria, versatile approach to training and strong predictive value the Yale Water Swallow Protocol was selected as the dysphagia screening tool utilised in this thesis – as will be later discussed in Chapter 4.

1.3.1.2 Clinical swallow examination (CSE).

Clinical swallow examination is usually conducted by a SP who has specialist training in the assessment and management of dysphagia (Rumbach et al., 2017; Speech Pathology

Australia, 2004). The timing of CSE completion is observed to be dependent on clinical practice area and site-specific criteria (Rumbach et al., 2017). Ad hoc referrals are noted to be common place in the acute hospital and community settings, while CSE following routine screening were more common in the post-acute and rehabilitation settings (Rumbach et al., 2017). Similarly, the timing and completion of a CSE is dependent on screening procedures, which may facilitate direct referral to instrumental swallow assessment in the event of a failed screen (Clave et al., 2008; Leder et al., 2016; Trapl et al., 2007). When conducted following a failed screening protocol, referral and assessment by the SP using a CSE is typically conducted within 24 hours (Martino et al., 2009).

Descriptions of what components constitute a clinical bedside swallow assessment vary in the literature, as do the reported specificity and sensitivity of items included in the assessment process. In the Australian health care setting the clinical swallow evaluation usually involves an evaluation of cranial nerve function and an observation of eating and drinking, with less routine use of cognitive communication screening, cough reflex testing, cervical auscultation and pulse oximetry (Gonzalez-Fernandez et al., 2013; Mustaffa-Kamal et al., 2017; Speech Pathology Australia, 2004). An observational study of 308 speech pathology assessment forms reported that the majority of CSEs included components prior to the observation (e.g. case history information), observations made during the direct clinical exam including trial of food and fluids, and components utilised to capture diagnostic and treatment planning elements such as recommendations of compensatory strategies and goal setting (McAllister, Kruger, Doeltgen, & Tyler-Boltreck, 2016). While observing the patient eat and drink, the SP makes observations regarding indicators of dysphagia such as coughing and voice changes (Cichero & Murdoch,

2006; Logemann, 1998; Mankekar, 2015; Mari et al., 1997; Rangarathnam & McCullough, 2016; Romano, Schultz, Tai, & White, 2014). The CSE is often conducted between meals and lasts approximately 5.54 +/- 2.18 minutes (Clavé et al., 2008).

A systematic review of 13 studies identified that the sensitivity of the CSE varied between 21% to 93% depending on methodological approach, while specificity ranged from 46%-93% (Romano et al., 2014). Despite variable sensitivity and specificity, a systematic review performed by Ramsey, Smithard, and Kalra (2003) reported the benefit of the CSE as it is safe, relatively easy to administer and easily repeated, however with reported variability in sensitivity (42-92%) and specificity (59%-91%). Individual items of the CSE have demonstrated varying degrees of accuracy in determining presence of dysphagia and risk of aspiration. For example, a careful case history which includes questions relating to previous difficulty with eating and drinking, as well as observed coughing while eating or drinking had a high sensitivity (88%), but with lower specificity (30%) (Mari et al., 1997). In a study of 60 stroke patients there were two items of the CSE which were identified as having appropriate reliability, sensitivity and specificity: the presence of cough during test swallows and the overall estimate of presence of aspiration (McCullough, Wertz, & Rosenbeck, 2001). It is acknowledged however that the CSE must be interpreted with caution as physiological components of the swallow may not be directly translated to clinical observations such as laryngeal elevation and frequency of swallows (Rangarathnam & McCullough, 2016).

While the inability of the CSE to provide accurate assessment regarding the presence of aspiration or the physiological basis of swallow impairments is acknowledged, the evaluation

does provide substantial information regarding the overall severity of dysphagia (Rangarathnam & McCullough, 2016). In addition, while SPs may not follow a rigid protocol for completion of a CSE this may in fact be due to the application of clinical reasoning and individual decision making (McAllister et al., 2016). Furthermore, the completion of a CSE may determine the need for instrumental assessment and can act as a baseline measure for treatment interventions (Speyer, 2013). In addition, the CSE provides useful information regarding feeding position, volume of oral intake, feeding equipment and compensatory strategies required, and the patient's perspective of eating and drinking (for example enjoyment and comfort) (McCullough et al., 2001).

Despite varying reports of sensitivity and specificity in the literature the CSE remains the predominant decision-making tool for SPs in the acute setting (Rumbach et al., 2017). It provides information on patient tolerance of a variety of food and fluids, identifies possible severity and causes of dysphagia and provides a starting point for further assessment options. In addition, the completion of a CSE is easy to administer at the patient's bedside, is short and relatively safe, and provides useful clinical decision-making to progress with instrumental swallow assessments as required.

1.3.1.3 Instrumental swallow assessment.

Dysphagia assessment has been described as a two-tiered model in which a CSE is performed first, and then referral is made to instrumental assessment only if clinically relevant/indicated (Martino et al., 2004). As discussed in the previous section the CSE provides preliminary information regarding feeding position, volume of oral intake, feeding equipment

and compensatory strategies required and the patient's perspective of eating and drinking (McCullough et al., 2001). However, to accurately evaluate the physiological swallow function and determine the presence of penetration or aspiration (particularly if the aspiration event is silent) an instrumental swallow assessment is required. In clinical practice, the SP routinely utilises two key instrumental assessments (1) VFSS and (2) FEES. In the Australian healthcare setting VFSS remains the most commonly utilised tool (Rumbach et al., 2017), with the utilisation of FEES slowly increasing, while other techniques such as pharyngeal manometry and ultrasound rarely used in clinical practice (Gonzalez-Fernandez et al., 2013).

The VFSS is a radiographic assessment of swallow function observing the oral, pharyngeal and upper oesophageal phases of the swallow under x-ray using barium coated food and fluids. The use of VFSS allows clinical diagnosis of airway protection, presence and timing of aspiration, presence of pharyngeal residue as well as an understanding of physiological function of the swallow during oral intake (Martin-Harris & Jones, 2008; Logemann, 1998; Palmer, Kuhlemeier, Tippett, & Lynch, 1993; Schatz, Langmore, & Olson, 1991). The procedure is usually a collaboration between a radiologist and the SP (Martin-Harris & Jones, 2008). Despite being regarded as a 'gold standard' in swallow evaluation, inter-rater reliability of VFSS components is noted to be low for oral phase ratings and only moderate for pharyngeal phase ratings (Kim et al., 2012). However, inter-rater reliability between multiple professionals including SPs and radiologists demonstrated an improvement following targeted training regarding the identification of dysphagia on VFSS (Silbergleit et al., 2018). In addition, the use of structured reporting templates for VFSS has demonstrated improved detail in swallow phases, comments regarding penetration and aspiration, and supported information extraction (Schoepee

et al., 2018). Clinically, the VFSS may at times be difficult to utilise as it requires patient transport to the medical imaging department, exposes the patient to radiation and requires specialist staff including a radiographer to be in attendance.

The FEES assessment uses a flexible laryngoscope passed trans-nasally to observe anatomical appearance of the hypopharynx and larynx, as well as the physiological function of the swallow with food and fluid (Langmore, Kenneth, & Olsen, 1988). It has the reported advantages of being able to visualise surface anatomy of pharyngeal and laryngeal structures, allows for clear visualisation of bolus path, is able to assess management of secretions and may be used to assess sensory function (Langmore, 2017). FEES procedures in the clinical setting most frequently follow the guidelines outlined by Langmore which include an observation of the anatomy, direct observation of food and fluids during swallowing, in addition to trials of compensatory or behavioural changes (Langmore, 2011). Clinically, FEES has the advantage of being mobile, having no risk of radiation exposure, and in some clinical settings following specialist training the SP may act as endoscopist reducing the need for additional clinical staff. In addition, a systematic review of 52 articles identified a greater sensitivity in FEES than VFSS in detecting aspiration and penetration, however sensitivity to detecting pharyngeal residue was similar in both tests (Giraldo-Cadavid et al., 2017). However, the procedure is considered more invasive and is not appropriate for patients who are severely confused, have severe movement disorders, or have experienced head and neck trauma which may be impacted by the presence of the nasendoscope.

1.3.1.4 Mealtime observation.

While the use of instrumental swallow assessments as the primary method of assessing patients with dysphagia is supported in the literature, in clinical practice it is not always possible and/or practical to conduct instrumental assessments with all patients presenting with dysphagia. In addition, all methods of dysphagia assessments involve exploring patient function in a short 'snapshot' of time, with a short duration typically involving the observation of swallows during approximately 3 to 8 minutes of screening 'on time' reported in VFSS studies (Chau & Kung, 2009; Kim, Choi, & Kim, 2013; Morishima, Chida, & Watanabe, 2016). Clinical variables such as fatigue, medications and anxiety can potentially influence test results (Martin-Harris & Jones, 2008). Therefore, monitoring of additional factors and influences during mealtimes may be required for certain patient populations. Hence due to the relatively short durations of screening tools, clinical bedside evaluations and even instrumental assessments it is recognised that the clinician may feel they have not captured all factors that can affect a patient's swallowing and mealtime functioning. Other factors that may impact on mealtime tolerance and swallow function may include fatigue, the effectiveness of compensatory strategies, the effect of varied or dual textures and/or the impact of self-feeding over the course of a meal. In addition, mealtime observation can be particularly useful for patients who are unable to participate in instrumental swallow assessments or are non-compliant with swallow trials during the CSE (Miller & Patterson, 2014).

Additional factors including need for assistance, attitude towards eating, seating and positioning, dentition, time spent completing meal, and behaviour during a meal (Miller & Patterson, 2014; Steele, Greenwood, Ens, Robertson, & Seidman-Carlson, 1997) that may impact

tolerance of meals also cannot be fully assessed without observation during the meal. The mealtime observation may include observation of anterior spillage or oral residue, ability to self-feed, caregiver feeding ability, body position, behavioural problems and reactions to external stimuli (Miller & Patterson, 2014), which are not routinely identified during the clinical swallow assessment. Similarly, the observation of a meal in the hospital setting may identify compliance with consistency of recommended diet and fluids, amount of food/fluid provided, adherence to prescribed swallow strategies and safe swallow recommendations, and ensuring appropriate level of supervision which all contribute to reducing clinical risk of dysphagia (Rosenvinge & Starke, 2005).

In a study of 520 elderly patients in a hospital rehabilitation unit, 82% of patients demonstrated one or more eating difficulties at mealtimes, including issues with ingestion (which included manipulation of food on the plate, passing the food from the plate to the mouth and achieving appropriate sitting position), deglutition (including impairments in oromotor function and swallowing) and energy (which included alertness, eating time and volume of food consumed) (Westergren, Unosson, Ohlsson, Lorefaelt, & Hallberg, 2002). Similarly, mealtime observations performed with 349 nursing home residents indicated that mealtime difficulties were observed in 84% of individuals, 68% of which demonstrated signs of dysphagia and 40% presenting with challenging mealtime behaviours (Steele et al., 1997). The literature appears to suggest increased risk of dysphagia and challenging mealtime behaviours in the ageing population, a factor which warrants investigation in the acute setting given that many patients in this clinical area will be in an older demographic.

Thus, while both the CSE and instrumental assessments are vital in determining swallow safety and physiology, patient functioning may differ over the course of an entire meal compared to that observed during these short assessment periods. Therefore, mealtime monitoring should be advocated for patients (Speech Pathology Australia, 2004), particularly those at risk of fluctuating function or fatigue, patients who are elderly or have challenging mealtime behaviours. Currently this role is primarily performed by nursing staff in the hospital setting due to their close proximity to the patient and knowledge of their daily activities. However, due to the significant time commitment required to observe an entire meal, nursing staff may not always be available to conduct a complete and thorough observation due to their own caseload demands.

1.3.1.5 Patient self-report measures.

While dysphagia screening provides information regarding risk of aspiration and mealtime observations provide evidence related to tolerance and the impact of factors such as self-feeding and fatigue the patient's own experience of their dysphagia cannot be overlooked. The use of self-report for medical conditions may promote communication between the patient and the healthcare professional and assist in shared decision making and a greater focus on the patient's own goals (Robinson, Callister, Berry, & Dearing, 2008). A number of patient self-report measures are available in the literature with three common examples described below.

The original 93 item SWAL-QOL has been reduced into two patient centred outcome tools (McHorney et al., 2002). The first tool is the new SWAL-QOL which is a 44-item tool which identifies the impact of dysphagia on ten quality of life concepts including food selection, burden, mental health, social functioning, fear, eating duration and desire, communication, sleep

and fatigue (McHorney et al., 2002). The second component of the original SWAL-QOL which has been independently subjected to psychometric testing is the SWAL-CARE, a 15-item tool which assesses the quality of dysphagia care received by the patient and their overall satisfaction (McHorney et al., 2002). On psychometric testing both scales demonstrate high internal consistency reliability and short-term reproducibility, as well as being able to differentiate patients with dysphagia (McHorney et al., 2002). In clinical practice, these self-report tools may be utilised to identify the impact of dysphagia on the patients' life, as well as providing information regarding the quality of care received. Similarly, the SWAL-QOL may be utilised as a clinical outcome measure to determine change in severity over time. However, despite significant reduction in item numbers the SWAL-QOL remains lengthy and therefore may be too time intensive to complete in the acute hospital setting.

The Eating Assessment Tool (EAT-10) is a patient completed questionnaire related to the individual's experience of dysphagia (Belafsky et al., 2008). While providing a patient specific view point, the EAT-10 (Bartlett, Moore, & Thibeault, 2018; Belafsky et al., 2008) has also demonstrated strong validity in predicting dysphagia and aspiration risk in multiple studies (Cheney, Siddiqui, Litts, Kuhn, & Belafsky., 2015; Ercilla et al., 2012; Plowman et al., 2016; Rofes, Arreola, Mukherjee, & Clave, 2014). In comparison to the longer SWAL-QOL tool the EAT-10 is short to administer and provides information regarding swallow severity as well as perceived life impact. Therefore, for the purposes of this thesis the EAT-10 (Belafsky et al., 2008) has been used in a similar capacity to a screening tool- as a possible predictor of dysphagia.

1.3.2 Summary.

The assessment of dysphagia in the acute hospital setting can be summarised into three stages (1) the identification of presence of dysphagia risk via screening (2) the identification of severity, cause and safety of the swallow impairment either via CSE and/or an instrumental swallow study (3) the monitoring of mealtime tolerance in a natural eating environment. Each assessment stage has identified strengths and weaknesses and therefore each is usually utilised in conjunction with other components. Depending on the location and individual workloads of disciplines these roles may be completed by different professions with dysphagia screening and mealtime observation frequently being completed by staff other than the SP (nursing staff in particular). Finally, patient report of symptoms can be used as a means to increase patient centred care, while also being a predictor of clinical outcomes such as dysphagia and aspiration risk.

1.4 New Models to Meet Growing Challenges with Dysphagia Assessment

With increasing demands on AHPs, and increasing health-care costs, simply employing more of the same type of professionals to meet growing service demands is not seen as an efficient or sustainable option in the long term (Nancarrow, 2015). Thus, a greater focus on workforce change is required particularly with regards to increasing flexibility including the consideration of transferring tasks to professionals in lower pay classifications as appropriate without losing specialisation (Duckett, 2005a, 2005b). This consideration of role flexibility has the potential to improve accessibility, reduce training demand and encourage distribution of resources in a more efficient manner (Nancarrow, 2015). Thus, the principles of role flexibility are gaining momentum in policy and practice as alternative models of care are required to meet

growing demands. These alternative models of care may include role extension, task substitution and delegation (Brooks, Robinson, & Ellis, 2008; Duckett, 2005a, 2005b; Sibbald, Shen, & McBride, 2004). Role extension and role substitution have both been used to identify and expand speech pathology services in dysphagia assessment and will be outlined briefly here for completeness. However, it is delegation models which are the focus of this thesis, and hence these will be only referred to in this section – and will be detailed in full in section 1.5 below.

The principles of role flexibility including role enhancement, substitution and delegation are strongly supported by the Queensland state government which has proposed a number of key strategies to meet growing demand including AHPs working to full and expanded scope of practice and the delegation of tasks to trained assistants (AHAs) (Queensland Health, 2014). However, changing workforce structure requires consideration of a number of factors including legislation and clinical standards, availability of educational programs, the context of workforce change, and most importantly patient needs (Dubois & Singh, 2009). In addition, a number of large-scale changes and considerations are proposed by Nancarrow (2015) including the reduction of training time, the regulation of competencies, the consideration of rewards and indemnity as they pertain to individual tasks, and the support for professionals to work to their full scope and delegate tasks that facilitate this increase in scope depths. These principles are not easy or quick to implement, and therefore warrant consideration and planning to ensure workforce changes are sustainable and effective. Furthermore, these workforce changes require identification of precise range of tasks which could be substituted, clarification regarding supervision requirements, and protocols to identify type of patient population groups where task substitution is appropriate (Duckett, 2005a, 2005b). It is clear therefore, that increased role

flexibility is not without barriers and should be carefully considered and evaluated to ensure efficiency and patient safety are assured.

1.4.1 Role enhancement.

Role enhancement is defined by Sibbald and colleagues (2004) as “increasing the depth of a job by extending the role or skills of a particular group of workers” (pg. 28). Role enhancement maintains the clinician’s individual clinical role however encourages them to work to their ‘full scope’ of practice (Bryant-Lukosius, Dicenso, Browne, & Pinelli, 2004) or extended scope. Role enhancement may be the result of new models of care, promotion of skill development, and support for professional development and collaboration (American Speech Language and Hearing Association, 1997). Role enhancement has perhaps been most widely applied in primary care and prevention to facilitate clinical staff such as nurses having a greater role in health promotion, health screening and discharge follow up to ensure greater depth and breadth of service delivery (Dubois & Singh, 2009). However, recently AHPs have introduced role enhancement into clinical practice by taking on traditionally medical duties such as prescribing and administering medications, requesting investigations, conducting procedures and reporting on results (Young, Hulcombe, Hurwood, & Nancarrow, 2015).

1.4.1.1 Role enhancement in dysphagia assessment practices.

In speech pathology practice specifically, extended scope of practice in dysphagia management has gained particular attention in the independent completion of nasendoscopy by trained and credentialed SPs during FEES assessments (Speech Pathology Australia, 2009, 2019). This role expansion reduces the need for a medical colleague (usually the ENT) to

complete the technical component of the FEES procedure, thus improving accessibility and efficiency of this assessment. The impact of SP led FEES is noted to be positive, with a file audit comparison of stroke patients pre and post introduction of SP led FEES service indicating a reduced incidence in pneumonia and increased likelihood of returning to un-modified diet following introduction of the service (Bax, McFarlane, Green, & Miles, 2013). Independent completion of nasendoscopy by a trained and credentialed SP has also been evaluated in the context of completing voice and dysphagia assessments typically performed by an ENT physician, with this model demonstrating both wait list reductions for the ENT and excellent maintenance of patient safety (Seabrook, Schwarz, Ward, & Whitfield, 2018). Within this service the SP conducted independent nasendoscopy to determine swallow safety and severity of dysphagia (Seabrook et al., 2018) which is a growing example of extended practice within speech pathology. The long-term impact of role enhancement however remains uncertain, particularly with regards to clinical outcomes of patients (Dubois & Singh, 2009). There is however some evidence to support that role enhancement may increase the professionals sense of purpose and meaning within their role (Cherniss, 1980; Farber, 1991; Kivimaki, Voutilainen, & Koskinen, 1995; Neuman, Edwards, & Raju, 1989) and may have a positive impact on workforce recruitment, retention and even pay opportunities (Collins et al., 2000). While role enhancement has played a key role in AHPs taking on more complex roles within their designated field (Queensland Health, 2014) it may not address the underlying shortage of health professionals within the current health care system.

1.4.2 Role substitution.

Role substitution suggests working across professional divides or substituting one professional for another (Sibbald et al., 2004). Workforce substitution is often initiated as a cost management strategy, by substituting a high cost professional with a lower cost individual, however the evidence to support this remains unclear (Dubois & Singh, 2009). Task substitution has gained acceptance in the allied health professions for instance by expecting nursing staff to perform certain clinical tasks usually conducted by an allied health professional after hours or on weekends (Hoskins, 2012). However, without clear guidelines individual tasks may go uncompleted as no professional feels that they 'own' this task resulting in role uncertainty and reduced task completion (Dubois & Singh, 2009). Similarly, role substitution has been at times described in a negative light in the literature as being perceived as a 'substitute' for an individual professional or as an inferior role which may impact on the professional identity of both disciplines (Baxter & Brumfitt, 2008; Hoskins, 2012). While role substitution models in allied health frequently relied on nursing staff, nursing staff are also experiencing an increase in workload, with a growing inability to meet demands resulting in missed care and adverse patient outcomes (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002); Kalisch & Aebersold, 2006; Sochalski, 2001; van Oostveen, Mathijssen, & Vermeulen, 2015).

1.4.2.1 Role substitution in dysphagia assessment.

Increasing demand and patient complexity has resulted in the consideration of role substitution models for supporting aspects of dysphagia assessment – in particular in the areas of dysphagia screening and mealtime monitoring conducted by another health professional. Nursing staff in particular play a pivotal role in avoiding negative dysphagia related outcomes by closely

monitoring and enforcing recommendations (such as modified diets and fluids), understanding the role of the SP, working towards the goals and objectives related to dysphagia recovery and ensuring communication regarding dysphagia management is accurate and complete (Tanner & Culbertson, 2014). More recently, nursing staff have taken on increasing responsibility for roles such as dysphagia screening (Cichero et al., 2009; Hines, Kynoch, & Munday, 2016; Titsworth et al., 2013; Trapl et al., 2007). In clinical practice nursing staff are also heavily relied upon by the SP to identify dysphagia risk (via screening or observation) and make referrals (Gonzalez-Fernandez et al., 2013) particularly as the nursing staff spend increased time monitoring and working with the individual patient (Tanner & Culbertson, 2014).

Early dysphagia screening utilising nursing staff has been shown to successfully identify dysphagia risk in a number of patient populations, with a high degree of accuracy in ratings reported (Cichero et al., 2009; Hines et al., 2016; Trapl et al., 2007). In addition, nurse led dysphagia screening was identified in a systematic review and large scale clinical studies to reduce incidence of chest infections when compared to patient populations who were not screened for dysphagia (Hines et al., 2016). Utilising nurse initiated dysphagia screening also aims to avoid unnecessary referrals to speech pathology for patients not presenting with dysphagia or risk of aspiration and may have an effect on time spent by speech pathologists completing this task (Hines et al., 2016; Martino et al., 2004). However, in many services there are increasing demands on nursing staff. A study of 171 nurse responders to a survey identified that 67% of responders stated that they experienced moderate to high levels of stress due to high demands in short time periods, with 33% reporting that a reduction in workload would alleviate workplace stress (McGrath, Reid, & Boore, 1989). More recently a qualitative interview study of

44 nurses, identified that due to increasing demand and patient complexity, nursing staff and managers were increasingly required to prioritise duties and resources, leading to a perceived reduction in quality of care (van Oostveen et al., 2015). Similarly, negative staff consequences such as exhaustion and burn-out were reported by nursing staff as a result of increasing job demands and reduced resources (Aiken et al., 2002; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001).

Dysphagia screening may also be performed by other professionals such as dietitians within a substitution model. For instance, a study of 32 stroke patients screened for dysphagia risk by both the dietitian and the SP identified excellent agreement (k=0.8) regarding dysphagia risk (Huhmann, Decker, Byham-Gray, Maillet, & Von Hagen, 2004). Similarly, a study of 34 patients within a neuroscience's unit identified that the SP and dietitian reached moderate agreement regarding dysphagia risk (Brody, Tougee-Decker, Vonhagen, & Maillet, 2000). Dysphagia screening performed by a dietitian may contribute to multi-disciplinary practice, reduce demands on the SP and may offer improve speed of screening completion.

Once dysphagia risk has been identified and the SP has conducted further assessment, ongoing monitoring of the patient becomes vital to preventing further clinical complications. As discussed previously in section 1.3.1.4 supervision of oral intake during meals, or 'mealtime monitoring' is often recommended by SPs and frequently requested in the ward environment to monitor tolerance of recommended diet and fluids and support the implementation of compensatory and rehabilitative strategies. Similar to dysphagia screening, assistance with mealtime monitoring has typically been sought from nursing staff (Hines et al., 2011; Hines et

al., 2016; Pelletier, 2004). While nursing staff can assist with identifying patients who are having difficulty at mealtimes (Hines et al., 2011; Hines et al., 2016; Pelletier, 2004; Westergren, Hallberg, & Ohlsson, 1999; Westergren, Ohlsson, & Hallberg, 2001), their equally high workload demands and reducing staffing numbers (Aiken et al., 2002; Sochalski, 2001; van Oostveen et al., 2015) have been recognised, and can result in some low priority duties not being completed (Sochalski, 2001; van Oostveen et al., 2015). This is evidenced by an audit of 31 patients in which only 35% of nursing interventions related to dysphagia care complied with amount of food and fluid provided, 34% complied with recommended supervision guidelines, and only 12% complied with strategies recommended by the SP (Rosenvinge & Starke, 2005). Assistance with feeding in particular is often reported as a ‘missed task’ due to lack of staffing and time required for intervention (Kalisch & Aebersold, 2006). Considering that mealtimes may take as long as 43 minutes per person per meal (Simmons & Schnelle, 2006; Simmons et al., 2008), this impacts on the ability of nursing staff to complete continuous monitoring over an entire meal in many settings. In addition, few nursing staff report receiving support and training for the provision of mealtime assistance and monitoring (Pelletier, 2004).

1.4.3 Summary.

As demands on the health service and AHPs continues to increase the workforce is required to consider a wider scope of practice, while also considering flexible models of workforce management including role enhancement and substitution to increase efficiency and capacity. A number of tasks have previously been performed by nursing staff within a substitution model; however, their equally high workload and workforce demands have resulted in the need to rethink workforce management models in allied health and increase consideration

of specialised support staff such as the AHA. Similarly, role expansion within speech pathology practice has demonstrated improvements in patient care and facilitates a reduction in demand and waiting times for medical colleagues such as the ENT, however these models generally do not reduce the demands on the speech pathology workforce and may in fact add additional duties and complexities to the SP's clinical role. Therefore, further models such as delegation must be considered in conjunction with role expansion and role substitution in order to address growing service demands.

1.5 Delegation Models

Delegation is defined by the Webster dictionary online (2018) as "the act of empowering to act for another" or "a group of persons chosen to represent others." In the allied health context, delegation is defined as the process by which an AHP delegates an activity or task to a support worker who has been identified to poses an appropriate level of knowledge and skill to complete the delegated task safely, within the context in which it is to be completed (Allied Health Professions Office of Queensland, 2016). Delegation models in particular have been proposed as a means to improve the efficiency and cost effectiveness of the healthcare workforce (Productivity Commission, 2005). Within a delegation model the AHP authorises another trained person (usually an AHA) to complete a task on their behalf, while maintaining professional responsibility and accountability for the tasks completion (Allied Health Professions Office of Queensland, 2013; Australian Capital Territory Health, 2014; Department of Health Western Australia, 2009; Health Victoria; 2012; New South Wales Health; 2012; Queensland Health, 2016). This is the important difference between role substitution and delegation, as the delegating professional retains the responsibility for task completion. The increased utilisation of

support staff within allied health under a delegation framework has been proposed to support workforce sustainability and increase capacity (Australian Capital Territory Health, 2014).

To date, however limited evidence exists regarding ‘delegation’ and changes to skill mix as it applies to AHPs, with the majority of research in this area being related to delegation models in nursing (delegation to health care assistants and assistants in nursing) and medical professions (delegation to physician assistants) (Gravlin & Phoenix Bittner, 2009; Rick & Ballweg, 2017; Sibbald et al., 2004). In a qualitative descriptive study of nursing staff delegation, nurses reported considering the patient condition, competency, experience and workload of assistant staff before delegating individual tasks, with successful delegation being reported when communication was appropriate, the system was supportive of delegation and nursing leadership was demonstrated (Gravlin & Phoenix Bittner, 2009). From the AHP perspective, delegation to a trained assistant has the advantage of maintaining oversight and responsibility, which ensures the safety and quality of task completion is maintained. In addition, delegation to an assistant reduces the cost per task, contributing to economic savings and cost efficiency (Duckett, 2005a, 2005b). However, delegation principles and practices are not without challenges and may generate clinician reluctance initially.

1.5.1 Delegation by allied health professionals.

The use of support staff under a delegation model in allied health is a relatively recent concept with this specialist role being called an AHA in most healthcare contexts throughout Australia. Support for increased utilisation of the assistant workforce may provide a strategic approach to dealing with AHP workforce shortages (Lizarondo, Kumar, Hyde, & Skidmore,

2010). Similarly, increased utilisation of the AHA workforce is proposed to improve workforce efficiency, reduce unmet demands, reduce waiting lists, improve staff satisfaction, and allow AHPs to spend time on increasingly complex tasks and expanded scope of practice roles (Lizarondo et al., 2010; Queensland Government, 2014; Somerville & Keating, 2012).

1.5.2 Delegation in speech pathology practice.

Despite growing support for delegation within wider AHP practice, literature regarding the use of AHAs in speech pathology practice remains limited. Existing studies are primarily limited to studies investigating use of assistants in the paediatric population, particularly in the United States of America or qualitative studies investigating the perceptions of SPs with regards to working with assistants. However, the need for increased utilisation in the area of speech pathology can be highlighted by an Australian survey in which SPs reported that 34% of their time could be re-distributed to trained AHAs (Somerville, Davis, Milne, Terrill, & Phillip, 2018). In addition, numerous Australian policy documents support the use of AHA delegation in the speech pathology profession specifically (Australian Capital Territory Health, 2014, American Speech Language and Hearing Association, 2013; Department of Health Western Australia, 2015, Health Victoria, 2012; New South Wales Health, 2013; Speech Pathology Australia, 2014; Queensland Health, 2016; Royal College of Speech Language Therapists, 2003). Similarly, the professional body for SPs in Australia (Speech Pathology Australia, 2014, pg. 4) states in its position paper that the professional body “supports a suite of initiatives to address workforce shortages including delegation to support workers.”

Similar to evidence from the general allied health literature, the tasks performed by speech pathology assistants in the paediatric population were identified in a survey study of 74 assistants as including primarily direct patient contact, documentation of progress and clerical duties in this setting (Ostergren & Aguilar, 2012). Similarly, when surveyed, 64 SPs reported that the assistants they supervised primarily completed the following tasks: following documented treatment plans, documenting client performance, and completing administrative tasks (Ostegren & Aguilar, 2015). While there appears to be a lack of defined 'scope' of practice, most assistant responders to a survey reported they 'never performed' diagnostic assessments or report writing, however they more frequently reported providing client and family education, despite this not being considered within their scope (Ostergren & Aguilar, 2012). This scope limitation is supported by the Australian national body for SPs, which highlights that all tasks associated with clinical diagnosis are outside of the AHA's scope (Speech Pathology Australia, 2014).

While still in its infancy, literature regarding AHA delegation in speech pathology practice does highlight the varied perceptions of SPs to working with assistants. A study of five SPs working with assistants reported both advantages (such as increased patient access and ability to contribute to more complex tasks) and disadvantages (such as time required to train the assistant and role boundary concerns) (McCartney et al., 2005). This was also found in a survey of 64 SPs who reported that the advantages of utilising assistants included caseload assistance; however, they were concerned regarding the potential for misuse of the assistant role such as assistants performing tasks outside of their scope (Ostergren & Aguilar, 2015). Similarly, a qualitative study using semi structured interviews of eight rural and remote SPs identified three key themes relating to AHA delegation in speech pathology practice (O'Brien, Byrne, Mitchell, & Ferguson,

2013). The first was the “Professional theme” which highlighted key areas of role delineation between AHA and SPs (such as assessments only being completed by the SP), however also highlighted the potential to utilise AHAs to increase amount and types of services offered. The second was an “Economic theme” that included the advantages and disadvantages related to cost and physical resources, including the potential to provide a more cost-effective workforce (O’Brien et al., 2013). The third was an “Operational theme” which highlighted the importance of engaged management and the difficulties identified with recruitment within financial resources (O’Brien et al., 2013). While evidence is emerging to support the role of AHAs within speech pathology practice, the area of dysphagia management has received little attention within the literature, despite being a key area of increasing demand for SPs working in the hospital setting.

1.5.3 Proposed benefits of delegation.

A proposed benefit of delegation practices is the increased capacity for AHPs, including SPs, to free up time (through delegating tasks) to enable the AHP to complete other clinical and non-clinical duties. This type of benefit was evidenced using a clinical time audit of speech pathology tasks completed pre- and post-implementation of a delegated assistant model (Nancarrow, Moran, & Sullivan, 2014). In that study results revealed an increase of over 100 minutes per week was allocated to direct patient care and an additional increase of 38 minutes per week in quality assurance activity being completed by the SP through delegation of other tasks to an AHA (Nancarrow et al., 2014). Similarly, in a multi-disciplinary setting, AHAs may be viewed by the team as increasing the entire team’s capacity to increase the intensity of services provided to patients, as well as being a focal point for provision of care shared amongst

different professions (Moran, Nancarrow, & Enderby, 2015). The utilisation of AHAs may also increase job satisfaction for allied health professions as they are able to spend more time on more complex clinical duties or spend their time conducting more operational/quality-based work (Somerville et al., 2015).

The perceived influence of AHA contribution to clinical practice is largely positive. For example, in a survey of 64 SPs who supervised assistants 46% rated the overall impact of assistants on their work as positive, with 50% reporting advantages with caseload management and 7% reporting assistants assisting them with the completion of clerical duties and managing speech pathology shortages (Ostergren & Aguilar, 2015). Similarly, a survey study of dietitian and their assistants reported that 90% of dietitians felt that assistants improved their working lives, with cost and efficiency improvements being reported (LeCornu, Halliday, Swift, Ferrist, & Gatiss, 2010). In a paediatric population using a case study of five assistants delivering intervention for language impairments, identified benefits included the potential for more patients to receive treatment, time savings for theSP, cost saving and increased time for the SP to complete more complex tasks (McCartney et al., 2005). Furthermore, in a more detailed analysis of semi-structured interviews eight rural SPs reported they could identify advantages to AHA utilisation including reduced workload with regards to administration tasks, increased time to see patients, reduced wait list, and increased ability to provide therapy (O'Brien et al., 2013).

1.5.4 Proposed challenges to delegation.

Despite emerging evidence to support proposed benefits of delegation models, AHA delegation appears to be under-utilised in the clinical setting. In a survey study of AHPs and

AHAs, AHPs reported that 24% of their time was spent undertaking tasks that could be safely delegated to a trained AHA (Somerville et al., 2018), suggesting current delegation models are under-utilised. This number increased to 56% in a focus group study of 120 Victorian sites conducted by Somerville and colleagues (2015). Similarly, in an audit of 41 AHA positions findings identified that AHAs performed a greater number of non-clinical tasks than outlined in their position statement (Stute, Hurwood, Hulcombe, & Kuipers, 2014). In fact, in 46% of cases AHAs were not working to full scope of practice due to insufficient training time, limited opportunities to practice, lack of understanding about scope and capacity and lack of confidence and training in delegation (Stute et al., 2014).

Under-utilisation of AHAs may be the result of lack of clarity regarding roles and the potential for negative perceptions from AHPs who may perceive role or professional threat (Munn, Aromataris, & Tufanaru, 2013; Nancarrow, Roots, Grace, Moran, & Vanniekerk-Lyons, 2013). Additional challenges in implementing AHAs include the high demand on assistants to learn new skills, the time invested in providing training, and lack of consistency and paucity of opportunities with regards to career progression and remuneration (Ellis & Connell, 2001; Wood et al., 2011). The time taken to train AHAs was also raised in qualitative interviews with SPs, who identified concerns regarding the time taken to train and supervise the AHA and concerns regarding lack of role delineation (O'Brien et al., 2013). Furthermore, assistants may not be used successfully if the assistant was not being utilised to their full or appropriate scope, if there was insufficient qualified staff to provide supervision, and if there were inadequate resources to provide training or recognition (Moran et al., 2015). An additional barrier to implementation is the AHPs concerns regarding accountability. In the absence of clear training and competency

guidelines, the AHP may feel that they will be accountable for the incorrect completion of delegated tasks. In addition, as supervision and delegation relationships of AHAs vary between profession specific and multi-professional reporting roles (Barrett, Stephens, Hulcombe & McEvoy, 2015; Nancarrow, Shuttleworth, Tongue, & Brown, 2005) this further complicates the responsibility and accountability requirements in different contexts.

Given ongoing ambiguity, some staff may be reluctant to delegate tasks to an AHA due to fear of role threat or loss of professional identity (Goldberg, Williams, & Paul-Brown, 2002a, 2002b; Le Cornu et al., 2010; McCartney et al., 2005; Munn et al., 2014; O'Brien et al., 2013; Ostergren & Aguilar, 2015; Paul-Brown & Goldberg, 2001; Pearce & Paggett, 2015; Stute et al., 2014). Reluctance to delegate may be the result of lack of clarity regarding role overlap, lack of understanding regarding the delegation process, lack of trust in the assistant or their training, and concerns regarding professional boundaries (Nancarrow, Moran, Wiseman, Pighills, & Murphy, 2012). Given the relatively new role of assistants a lack of understanding may limit delegation practices. This is particularly evidenced by the fact that professional's newer to clinical practice were more reluctant to delegate tasks to assistants, finding it more difficult to adjust to new roles and boundary threats (Nancarrow et al., 2014).

1.5.5 Facilitating delegation.

As pressures to create workforce re-design increase there is capacity to increase the role of AHAs through increasing clarity of roles, increasing confidence in delegation, and improving trust and working relationships (Nancarrow et al., 2012). A thematic analysis of an interview study of 153 AHPs and assistants reported that nine key strategies would promote the

employment of assistants including: multi-disciplinary input into training, establishing clear communication structures, ensuring appropriate access to supervision and removing barriers that prevent staff from working to full scope (Moran et al., 2015). Similarly, suggestions for overcoming barriers to utilisation from a meta-analysis of published articles included increased education and training programmes, and an increased focus on collaborative learning and positive professional relationships (Munn et al., 2013). Thus, while new delegation practices may initially result in some resistance, there is evidence to suggest that these barriers can be overcome to successfully integrate delegation within AHP professional practice.

1.5.6 Defining scope of practice in delegation models.

Prior to adopting AHA delegation as a workforce management strategy, it is vital to clearly define role and scope of practice. The role and scope of AHAs were summarised by a thematic literature review as covering four domains including direct care, indirect care, administration, and facilitation (Moran, Enderby, & Nancarrow, 2011). Similarly, the roles AHAs play in supporting AHPs may be summarised by the tasks they complete, their role in the organisation and the locations in which they are most commonly being utilised. The tasks of AHAs can also be defined by their 'role,' which may include 'the helper/enabler,' the 'companion', the 'facilitators' and the 'monitor' (Moran et al., 2011). These roles may be applied in a number of clinical settings including the patient's home, community services and hospitals (Stanhope & Pearce, 2013). In a longitudinal study of 20 patients being reviewed by a community rehabilitation team, 36% of direct patient care was delivered by the AHA with a greater likelihood of AHA involvement for patients who were older, female and less dependent (Moran, Nancarrow, Enderby, & Bradburn, 2012).

Further contextual factors such as setting, training and education, skill of professional and accountability all impact on the role of support staff in the allied health context (Moran et al., 2011). For instance a focus group study of five AHAs, five supervising occupational therapists, four team managers and three service users identified variability in roles delegated to the assistant depending on the availability of AHP staff (Mackey & Nancarrow, 2005). In addition this study reported difficulty in determining which tasks could be delegated (Mackey & Nancarrow, 2005). Despite contextual variation, there appears to be some consistency regarding role limitations, with AHA tasks being limited to those that relate to assisting, supporting, monitoring and maintaining, rather than evaluating, assessing, diagnosing and planning as per the systematic review performed by Lizarondo and colleagues (2010). This differentiation is also supported by leading Australian policy documents. These state that tasks relating to clinical decision making (such as diagnosis; deciding type; frequency or goals of care; completing initial assessments or interpreting referral information) are not appropriate to be delegated to an AHA regardless of education level or support structure (Allied Health Professions Office of Queensland, 2016; Australian Capital Territory Health, 2014; Department of Health Western Australia, 2015; Health Victoria, 2012; New South Wales Health, 2013, Queensland Health, 2016). However, clinical duties which include patient education, clinical procedures and assisting the AHP are noted to vary significantly between sites (Munn et al., 2014). Similarly, agreement regarding AHA scope of practice may be difficult to achieve. As evidenced by a review of role descriptions and focus groups performed by Stute, Hurwood, Hulcombe and Kuipers (2013) it was identified that high agreement on scope could be reached for tasks that presented with minimal perceived risk, had some historical precedent and had no perceived role

threat and required no professional judgement. Agreement was more difficult to achieve with tasks relating to assessment, treatment, leadership, documentation and team participation due to concerns relating to legal implications, patient risk and tasks requiring clinical judgements (Stute et al., 2013). Thus, scope of practice for AHAs currently remains poorly defined and highly dependent on context specific factors such as access to training and therefore warrants greater clarification using specific clinical task examples.

1.5.7 Training and competency for AHAs.

Despite being a core component of successful delegation, training for AHAs currently remains variable and highly context dependent. In Australia, the Certificate IV in Allied Health Assistance is a formal qualification for AHAs (Stanhope & Pearce, 2013; Wood, Schurs, & Amsters, 2011), which offers a consistent and standard approach to training via mandatory components including competencies, assessments and a predefined framework for qualifications (Munn et al., 2014). In the United Kingdom where national training has been largely embraced, up to 97% of interviewed services reported their assistants had completed ‘National Vocational Qualifications’ and 73% reported the addition of ‘in house’ training (Nancarrow et al., 2005). Despite a growing focus on standardised national qualifications, operational and clinical evidence suggests that a large proportion of training for individual delegated tasks is conducted on an individual basis as ‘on the job’ training.

To date the utilisation of informal or local training lacks published evidence to support a standardised approach. This is in part due to the variety of professions that the AHA may support and the wide variety of tasks that may be required of them (Stanhope & Pearce, 2013). Training

may include short in-services, ‘on the jo’ training, vocational programs or prior university education (Munn et al., 2014). Informal local training may also include a (1) demonstration of the task, (2) the assistant demonstrating the task under supervision/observation or, (3) regular feedback and documentation (Pullenayegum, Fielding, Du Plessis, & Peate, 2005). It is vital that the assistant receives training on the clinical tasks they are to perform, are assessed on their ability to safely complete these tasks, and receive ongoing supervision (Munn et al., 2014) however currently there exists an evidence gap in the type, intensity and service delivery options for specific task related training. The effectiveness of training may be impacted on by the degree of collaboration between the assistant and the health professional, the teaching methods and the opportunity for reflection (Munn et al., 2013) which highlights the need for high quality supervision.

Similarly, the importance of supervision in delegation models is highlighted by the need for AHP oversight of task performance and regular feedback. Supervision may take the form of an allocated mentor who holds an allied health degree, team supervision from a variety of members within the multi-disciplinary team, and direct formal or informal supervision from an operational manager or line manager (Barrett et al., 2015; Nancarrow et al., 2005). Within the speech pathology profession, a survey study of 133 speech pathology assistants in California identified that direct patient contact, clear expectations and an approachable supervisor were key elements in gaining skills and experience as an assistant (Ostergren, 2012). Thus, it is likely that the provision of high-quality supervision has an influence on the type and amount of training received, as well as influencing the types of duties confidently performed by the AHA.

1.5.8 Summary.

In order to address issues of growing demand in both dysphagia management and AHP service provision more broadly, the literature, policy and practice is increasingly turning to principles of workforce flexibility to improve efficiency, cost effectiveness and service delivery within the health care context. Delegation in particular is of interest to AHPs, as it may increase professional capacity, improve job satisfaction and reduce economic demands. However, delegation practices currently remain poorly researched within AHP clinical practice. While evidence to support AHA delegation is beginning to emerge there remains a scarcity of literature to support their scope of practice, the training they require, the monitoring requirements for tasks completed and their role in the broader allied health context. This may initially result in reluctance to introduce delegation models into clinical practice, however may be overcome through clear role delineation, provision of high-quality training, and ongoing supervision and monitoring.

1.6 AHA Involvement in Dysphagia Management

In addition to a lack of literature and evidence to support the role of AHAs in speech pathology practice generally, to our knowledge there is limited published article describing the role of AHAs in dysphagia management (Sharma, Ward, Burns, Theodoros, & Russell, 2012). In that study, Sharma and colleagues (2012) utilised an AHA as an assistant during dysphagia assessments performed via telehealth after providing specialised training for this role. The AHA was noted to increase their knowledge of dysphagia and reported feeling confident completing the assessment under the direction of the SP (Sharma et al., 2012), suggesting that dysphagia could be an area for AHA role expansion. Similarly, in a study by Ward and colleagues (2012a,

2012b) the AHA was noted to be instrumental in managing patient factors such as hearing impairment, movement disorders and emotional issues in order to contribute to successful completion of a telehealth dysphagia assessment. Context, training and competency requirements however must first be investigated. Therefore, a review of delegation context in the acute healthcare setting, particularly with regards to policy support is required to generate support for delegation practices. In addition, to build on this initial knowledge base, further evidence is required to support the types of tasks AHAs may conduct, the training required to complete these tasks safely, and the perceptions of both AHAs and SP to this new area of delegation practice.

1.6.1 Training and preparation for dysphagia management.

While not specifically related to speech pathology delegation, in the Queensland health context much of the delegation practices and training development has been completed under the framework of the Calderdale Framework (Smith & Duffy, 2010) which provides a 'formal, risk managed and structured framework' to workforce re-design (Allied Health Professions Office of Queensland, 2013b). The Calderdale Framework incorporates seven key stages (1) Awareness raising, (2) Service analysis, (3) Task analysis, (4) Competency identification, (5) Support systems, (6) Training, and (7) Sustaining (Smith & Duffy, 2010). These components have been vital in establishing training and delegation pathways for AHAs in the Queensland Health context. However, despite the introduction of this standardised framework, delegation to AHAs in the area of dysphagia management is still in its infancy, with Allied Health Professions Office of Queensland (AHPOQ) only recently publishing a theoretical training package relating to dysphagia (Allied Health Professions Office of Queensland, 2017). Similarly, policy documents suggest that delegation of dysphagia related tasks should be strongly linked to the completion of

the Certificate IV in Allied Health Assistance (Australian Government, 2013). That training includes a module on supporting dysphagia management and provides guidance regarding specific dysphagia related tasks that could be considered for instance mealtime observation, monitoring of therapy completion, and diet modification education (Australian Capital Territory Health, 2014; Health Victoria, 2012; New South Wales Health, 2013).

The types of tasks, competency requirements, support systems and training required by AHAs to complete dysphagia related tasks safely and effectively therefore remain limited. Sharma and colleagues (2012) reported that training of the assistant included both content learning and clinical observations taking approximately four hours with one assistant. Content information (using both written and video) included material on the normal swallow, anatomical structures, description of the normal swallow and signs and symptoms of dysphagia (Sharma et al., 2012). Further “hands on” training was provided by two SPs who acted as standardised patients and provided an opportunity to practice set up, positioning and the completion of oromotor tasks (Sharma et al., 2012). While the assistant in this study provided set up and support to a SP conducting a telehealth assessment of dysphagia, it is feasible that the completion of content and then clinical observation could be successfully utilised when training an AHA to complete other dysphagia related tasks such as dysphagia screening or meal time observation.

The utilisation of AHAs for dysphagia screening and mealtime observation therefore presents a unique opportunity. When using nurse training in dysphagia screening as a precedent, training should include theoretical knowledge of dysphagia and a thorough description of the tool, with some form of competency assessment (either knowledge check or practical demonstration) to

ensure understanding (Cichero et al., 2009). This appears consistent with the theoretical training component utilised by Sharma and colleagues (2012). Training requirements for mealtime observation are more complex to define as the literature lacks a clearly defined process for observation over a meal, and therefore does not include a clear description of skills required. A comparable task may be the provision of mealtime assistance for which a half day training session included safe feeding practices, signs of difficulty and nutritional needs in the elderly population (Payne, De Wet, Sutton, & Warwick, 2010). While these studies provide a description of theoretical components of training, they fail to describe additional factors described in the Calderdale Framework such as competency and ongoing support.

1.6.2 Summary.

As the population ages, demands on health services increase and the role of SPs is increasingly directed towards the provision of dysphagia services within the hospital setting, significant workforce changes are required in order to meet escalating demands within stable or declining resources. The growing demands on healthcare resources is also impacting on professions such as nursing who traditionally conducted dysphagia related tasks such as screening and mealtime observations. Therefore, to reduce demand on SPs and nursing staff, while maintaining high quality dysphagia services including screening and mealtime monitoring an Allied Health Assistants (AHA) has been proposed as a suitable professional who could complete these dysphagia management tasks following appropriate training. Despite positive perceptions and emerging evidence to support the role of AHAs in dysphagia management, there currently remains limited utilisation of delegation within the speech pathology field. This perceived under-utilisation or lack of appropriate delegation may be the result of limited

knowledge of AHA role and scope of practice, lack of appropriate training for task delegation or limited evidence to support the safe completion of delegated tasks. Therefore, in order to adopt AHA delegation as a viable workload management approach, greater delegation in clinical practice must rely upon a clear definition of AHA scope of practice and high-quality training provision.

1.7 Overall Summary of Key Issues in this Thesis

As highlighted throughout this introductory chapter, the increased utilisation of AHAs has the capacity to assist with the management of an increasing workload, within the context of an ageing population and increased demands on services. To facilitate this change in practice the role of AHAs needs to be more clearly defined and their scope of practice and training requirements investigated in policy and clinical practice. Similarly, the context of delegation practices with regards to policy and practice standards requires establishment. In the area of dysphagia management in particular the role of the AHA has been poorly investigated, however may have significant potential to reduce speech pathology workload and improve patient experience, while maintaining patient safety and quality of service provided. Dysphagia tasks such as dysphagia screening and mealtime observation which are currently completed by SPs or nursing staff under a substitution model offer a unique opportunity to implement and evaluate AHA delegation. These tasks may act as an exemplar to ensure accuracy and safety of AHA delegated dysphagia related task completion, provide guidance regarding training and competency requirements and evaluate stakeholder perceptions in order to address growing workforce demand.

1.8 Overall Thesis Objective

As demands on the AHP workforce increase, there is greater awareness that services need to embrace flexible and innovative models of care, including the delegation of appropriate tasks to trained support staff such as AHAs. The appropriateness and impact of AHA delegation in the area of dysphagia management is currently poorly understood. Therefore, it is the primary intention of the series of prospective investigations presented in this thesis to provide data on the reliability, validity, feasibility and perceptions of introducing AHA delegation in the clinical area of dysphagia management (focusing on the specific tasks of mealtime observation in Chapter 3 and dysphagia screening in Chapter 4 and 5). These chapters follow on from a mixed methods evaluation of current policy approaches and stakeholder perceptions regarding AHA delegation in dysphagia management presented in Chapter 2. The overall objective of this body of work is to provide SPs working in the acute hospital setting with greater confidence in delegating dysphagia related tasks to trained AHAs, therefore increasing workforce flexibility and potentially providing a means to manage increasing workload demands and finite health resources. This thesis also aims to present clinically relevant information regarding AHA delegation which supports identification of training requirements, scope of practice decision making, speech pathology service delivery and planning for patients with dysphagia.

To meet the overall objective of the thesis, the following aims and hypotheses were developed. From these, specific study aims are presented in each of the study chapters.

1. To determine the context of AHA delegation in the area of dysphagia in relation to policy documents, literature and stakeholder perceptions (Chapters 2 and 5)

Hypothesis 1: Given growing literature support for delegation models it is expected that policy and stakeholder perceptions will support AHA delegation in the area of dysphagia, however these positive perceptions will be context dependent.

2. To determine the validity and feasibility of AHA delegation for specific dysphagia related tasks (Chapters 3 and 4)

Hypothesis 2: Based on the strong focus on training and competency achievement it is anticipated that a high degree of agreement between the AHA and the SP will be identified on the mealtime observation and dysphagia screening tools.

1.8.1 Research methodology and thesis outline.

Three separate studies have been undertaken, which have provided the data for four investigative chapters for this thesis. Chapter 1 and 6 are the introduction and discussion chapter respectively, as these are not based on clinical research, information regarding design and methods has not been included here. The study contributing to Chapter 2 employed a mixed methods approach (Zhang & Creswell, 2013). Information was obtained from a document analysis of current policy documents and an electronic survey exploring current clinical perceptions and practice patterns regarding AHA delegation in speech pathology practice. Synthesis of the information from these two sources was used to gain insight into current policy and professional practice/perceptions on AHA use, specifically in dysphagia management.

The study contributing to Chapter 3 was conducted as a mixed method design study involving three stages. Firstly, the AHAs underwent 1 hour of training on how to conduct mealtime observations and use the mealtime observation tool and then completed a competency

check using a purpose-built competency assessment tool. Once trained, both AHAs and SP conducted simultaneous observations of the cohort of 50 patients. Finally following completion of the 50 observations, semi-structured interviews were conducted with AHAs and SPs to explore perceptions of the training and service model.

The study contributing to Chapter 4 was performed as a prospective cohort design, completed in two phases. *Phase 1- Validity:* In phase 1, the AHA and SP performed simultaneous swallow screens to investigate the validity of AHA completed dysphagia screening. Information was collected regarding overall pass/fail agreement as well as item-by-item agreement between AHA and SP on each component of the screening process. *Phase 2- Feasibility:* In the second phase of this study the SP delegated appropriate low risk patients to the AHA for independent dysphagia screening. A true negative was identified if the AHA had deemed the patient to 'fail' on the screening tool (therefore identifying indicators of dysphagia) and the SP confirmed that the patient required modified diet and/or fluids due to dysphagia and documented an impression of mild, moderate or severe dysphagia in the clinical medical record following assessment or concerns were identified on the chart audit performed after screening completion. A false negative was identified if the AHA had deemed the patient to 'fail' on the screening tool (suggesting indicators of dysphagia) however the SP reported that the patient did not require diet/fluid modification and was documented to have nil swallowing issues/dysphagia.

Finally, to examine the contextual factors that influenced implementation of AHA completed dysphagia screening and to understand the facilitators and barriers to implementation the Consolidated Framework for Implementation Research (CFIR) framework (35) was applied

to qualitative, semi-structured interviews in Chapter 5. Interviews were conducted with 67% (8 out of 12) of available staff. Both AHA and SP team members involved in the implementation of the model at each site were invited to attend, however separate interviews were conducted with each profession.

1.8.2 Ethics.

Prior to commencement of all research studies contained in this thesis, ethical approval was sought and granted from the Human Research Ethics Committee of Griffith University or Metro South Hospital and Health Service. In addition, all documents and ethical approval documentation were sent for validation and approval by the Human Research Ethics Committee at the University of Queensland.

- The study which forms Chapter 2 of this thesis received ethical clearance from the relevant (Griffith University) Human Research Ethics Committee in 2017- GU Ref No:2017/086 (17/2/2017), UQ Ref No: 2017000270 (8/3/2017). As data collection and analysis is complete for this study, ethics has been closed with closure report forwarded to University of Queensland Ethics Committee for noting. Approval of closure received 19/06/2019.
- The study which forms Chapter 3 received ethical approval from the Metro South Hospital and Health Service HREC. As data collection is complete for this study, ethics has been closed with closure report forwarded to the University of Queensland Ethics Committee for noting. HREC/14/QPAH/509-SSA/14/QPAH/523 (19/11/2014)- ethics closed following completion of data collection- 11/10/2018 and UQ Ref No: 2017000290 (29/06/2017). Approval of closure received 19/10/2018.

- The study which forms Chapter 4 and 5 received full ethics approval from the Metro South Hospital and Health Service Human Research Ethics Committee- HREC/15/QPAH/486-SSA/15/QPAH495 (30/8/2016) and UQ Ref No: 2017000269 (29/06/2017).

1.8.3 Formatting and terminology used within thesis.

All referencing and formatting throughout this thesis have been changed to be consistent with the American Psychological Association style guidelines (6th edition). In addition, all references cited in each of the six thesis chapters has been combined and presented as a single reference list beginning on page 214, at the conclusion of the thesis. Furthermore, the term 'Allied Health Assistant (AHA)' will be used throughout the thesis to refer to an individual who assists or provides any type of support to the work of a qualified allied health professional as per the definition provided by Lizarondo and colleagues (2010). The terms Speech Pathologist and Speech Language Pathologist are utilised interchangeably throughout this thesis to comply with journal specific requirements. Similarly, all tables and figures have been compiled into a single consecutively numbered list, summarised on page xxiii and xxiv.

Prior to each of the following chapters, a short description which aims to link each chapter to the overall thesis is provided for the reader. In addition, to fulfil the requirements for 'thesis by publication' this description also included information about author contribution, how the chapter relates to the final manuscript (either published or under review), the journal in which the manuscript appears/will appear and the formatting changes that have been made to comply with APA guidelines.

2 Chapter 2. Delegation Models in Dysphagia Management: Current Policy, Clinical Perceptions and Practice Patterns

Schwarz, M., Ward, E.C., Cornwell, P., Coccetti, A. (2019). Delegation models in dysphagia management: current policy, clinical perceptions and practice patterns. *International Journal of Speech Language Pathology*, Early Online, DOI:10.1080/17549507.2019.1632932.

2.1 Contributions

Contributor	**Statement of contribution**
Author Maria Schwarz (Candidate)	Study Design – 60% Recruitment – 60% Data collection – 60% Statistical analysis – 60% Wrote the paper – 85%
Author Elizabeth Ward	Study Design – 20% Recruitment – 0% Statistical analysis – 20% Edited the paper – 20%
Author Petrea Cornwell	Study Design – 20% Recruitment- 0% Statistical analysis -20% Edited the paper – 10%
Author Anne Coccetti	Study Design – 20%

	Recruitment – 20% Data collection – 20% Edited the paper – 5%

2.2 Integration of Chapter 2 with Thesis

As outlined in the introductory chapter (Chapter 1), demands on speech pathologists (SPs) continue to grow within health services, particularly in the area of dysphagia management. Traditional models of task substitution such as dysphagia screening and mealtime observation being performed by nursing staff, are becoming less viable as workload demands on nursing staff are also increasing significantly. Therefore, delegation to Allied Health Assistants (AHAs) is being suggested as a management strategy to reduce demand and increase efficiency. Delegation to AHAs is reported to be an effective workforce solution in a number of areas of paediatric practice and in adult SP practice areas such as rehabilitation of language and speech deficits. However, there has been limited investigation of AHA involvement within dysphagia management, and anecdotally, there remains some clinical resistance to AHA involvement in this clinical area. Within the context of this thesis (Queensland Health) initial work has been undertaken to provide policy guidance regarding the delegation of tasks to AHAs, however the broader policy and professional context of this practice remains unclear. To this end, evidence is required to determine clinical perceptions and current use of assistants in the speech pathology profession, and to what extent practices are informed and supported by current policy (from professional bodies and Australian health services). Hence the aim of this chapter was to synthesise information from policy documents and current clinical practice to examine the nature of AHA delegation models in dysphagia management.

The following manuscript entitled “Delegation models in dysphagia management: current policy, clinical perceptions and practice patterns” is included as Chapter 2. The aim of this study was to synthesise information from policy documents and current clinical practice to examine the nature of AHA delegation in dysphagia management. A mixed method design involving a document review of 13 policy documents on AHA delegation, and a survey of 44 SP managers regarding current delegation models was conducted. This manuscript was published in International Journal of Speech Language Pathology in 2019 and is inserted as Chapter 2 of this thesis as published. For consistency throughout the thesis, formatting changes that have been made to align with the American Psychology Association Style guidelines (6th edition) and citations within the body of the text that have been referenced in previous chapters have been listed as subsequent citations within the text. Supplementary material available electronically from journal have been included within the text for the purposes of this thesis. Similarly, the abbreviations defined in previous chapters are listed on page xxvi and are not re-defined in this chapter. All references are listed at the end of this thesis.

2.3 Title: Delegation models in dysphagia management: current policy, clinical perceptions and practice patterns

Maria Schwarz, B.SpPath (Hons) [1, 2], Elizabeth C. Ward, BSpThy (Hons), Grad Cert Ed,PhD [2, 3], Petrea Cornwell, B.SpPath, PhD [4] and Anne Coccetti, B.SpPath (Hons) [1]

1. Speech Pathology and Audiology Department, Logan Hospital, Metro South Hospital and Health Service, Queensland, Australia

2. The University of Queensland, School of Health & Rehabilitation Sciences, Brisbane, Queensland, Australia

3. Centre for Functioning and Health Research, Metro South Hospital and Health Service, Brisbane, Queensland, Australia

4. Menzies Health Institute, School of Allied Health Sciences, Griffith University, Queensland, Australia

2.4 Abstract

Purpose: Delegation to Allied Health Assistants (AHAs) is an effective workforce solution in a number of areas of adult speech language pathology (SLP) practice. However, reports of AHA delegation in the area of dysphagia management are limited. The aim of this study was to synthesise information from policy documents and current clinical practice to examine the nature of AHA delegation in dysphagia management.

Method: A mixed method design involving a document review of 13 policy documents on AHA delegation, and a survey of 44 SLP managers regarding current delegation models.

Result: Policy and current practice were largely congruent. Despite policy support for AHA delegation, 77% reported using delegation models but only 26% used them fairly often/very often in dysphagia management. Both policy and survey findings support AHA training prior to task delegation, however, the nature of training was unspecified. Good governance is integral to successful delegation and managers recognised the need to increase standardisation of AHA capability assessment.

Conclusion: AHA delegation in dysphagia management is supported by policy and is being implemented in clinical services. However further work detailing governance and training requirements is needed, as well as systematic evaluation of the safety and benefits of these models.

Key words: Allied Health Assistant, delegation, policy, dysphagia

2.5 Introduction

Dysphagia is a common consequence of a number of medical conditions, as well as the normal ageing process (Cabre et al., 2010; Meng et al., 2000; Paranji et al., 2017; Roden & Altman, 2013; Rofes et al., 2010; Sarabia-Cobo et al., 2016). Hence, as the global population grows and ages, the numbers of patients presenting with dysphagia is anticipated to increase. This will place further pressures on speech language pathology (SLP) services, which in the majority of healthcare settings globally are responsible for assessing and managing dysphagia (Rumbach et al., 2017). Indeed, a study of 1348 referrals to SLP identified that between 2007 and 2014 the referral rate for dysphagia increased by 68% in patients aged between 70-79, with an increase over 200% for patients aged over 90 (Leder et al., 2016). Over the last 20 years this growth in dysphagia referrals has resulted in a shift in adult acute care SLP practice away from more traditional roles in communication assessment and therapy, to focus on dysphagia management (Armstrong, 2003; Code & Heron, 2003; Foster et al., 2015).

Such increasing demands on the SLP workforce, has driven the need to consider alternative models of care including consideration of task delegation to trained support staff such as assistants (Allied Health Professions Office of Queensland (AHPOQ), 2016; Australian Capital Territory (ACT) Health, 2014; Brooks et al., 2008; Department of Health Western Australia (DHWA), 2015; Health Victoria, 2012; New South Wales (NSW) Health, 2013; Queensland Government, 2014). Increased utilisation of the Allied Health Assistant (AHA) workforce is proposed to improve workforce efficiency, reduce unmet demands, reduce waiting lists, improve staff satisfaction, and allow Allied Health Professionals (AHP) to spend time on increasingly complex tasks and expanded scope of practice roles (Lizarondo et al., 2010;

Nancarrow et al., 2014; Queensland Government, 2014; Somerville & Keating, 2012). However, to date uptake and use of delegation models remains variable, with studies identifying that the skills of AHAs remain underutilised (Somerville et al., 2015).

Systematic study of AHA utilisation within adult SLP practice, has been primarily discussed in relation to aphasia rehabilitation, which identified an increase in treatment intensity, however, also contributed to increased planning and training time for the SLP during initial implementation (Gunning et al., 2017; Wenke et al., 2014). In the clinical area of dysphagia, studies investigating the AHA role to facilitate dysphagia assessment has been limited to the area of telepractice (Sharma et al., 2012; Ward et al., 2012a, 2012b; Ward et al., 2014) and more recently mealtime observations (Schwarz, Ward, Cornwell, Coccetti, & Kalapac, 2018). Key barriers to implementing AHA delegation in SLP practice have been raised by several authors, including the need for pre-service training, changes in workplace processes and lack of validity and efficacy data related to assistant provided interventions (Goldberg et al., 2002a; Goldberg et al., 2002b). Other challenges exist regarding the appropriateness of task and role delegations, with AHPs reporting concerns regarding lack of role clarity, lack of understanding about delegation practices, lack of trust in assistants, lack of formalised training structures and concerns regarding professional identity (Nancarrow et al., 2013; Stute et al., 2014).

Overall, there has been limited investigation of AHA involvement within dysphagia management, and anecdotally, there remains some clinical resistance to AHA involvement in this clinical area. To this end, evidence is required to determine clinical perceptions and current use of assistants in the SLP profession, and to what extent practices are informed and supported by

current policy. Hence the aim of this study was to synthesise information from policy documents and clinical practice to examine the current nature of AHA delegation models in dysphagia management.

2.6 Methods

This study employed a mixed method approach (Zhang & Creswell, 2013). Information was obtained from a document analysis of current policy documents and a survey exploring current clinical perceptions and practice patterns regarding AHA delegation in SLP practice. Synthesis of the information from these two sources was used to gain insight into current policy and professional practice/perceptions on AHA use, specifically in dysphagia management. The study received ethical clearance from the relevant Human Research Ethics Committee.

2.6.1 Document analysis.

2.6.1.1 Review approach and search strategies.

A document analysis as described by Bowen (2009) was performed of policies publicly available in October 2017 documenting current utilisation of AHAs within health services. Electronic searches of the websites of Australian state and territory health services using the search term “Allied Health Assistant,” was conducted, as well as the national speech pathology governing (SPA) and other peak English-speaking bodies related to SLP practice (United Kingdom (RCSLT), New Zealand (NZSTA) and United States of America (ASHA)) using the same search term “Assistant.” In addition, the policy and position statements of Australian professional bodies for dietetics, occupational therapy and physiotherapy were reviewed using the search term ‘Assistant.’

2.6.1.2 Policy document analysis.

As per Bowen (2009), the document review process was conducted to "indicate the conditions that impinge upon the phenomena currently under investigation" (Bowen, 2009 pg. 30). Analysis of documents was conducted following Bowen's approach which involved "skimming (superficial examination), reading (thorough examination) and interpretation…. combining elements of content analysis and thematic analysis" (Bowen, 2009, pg. 32). The initial steps of analysis involved the lead author (MS) reading all the identified documents in full. Data in the form of excerpts and quotations from the documents were then analysed to identify major themes and categories through content analysis (Labuschagne, 2003). Excerpts and quotations were collated in a Microsoft Excel (2010) spreadsheet and assigned major themes and categories based on similar phrases and topics. In addition, each document was given an overall rating by the first author (MS) regarding its considered completeness i.e. "a sense of [the document] being comprehensive" or incompleteness i.e. "covering only some aspects of the topic" as per Bowen (2009, pg. 33). A second author (EW) then independently reviewed a sample of documents defined as 'complete' (n=3) and reviewed the initial set of excerpts and quotes derived from the documents to confirm the final themes and categories. Any discrepancies in analysis were revised through joint discussion.

2.6.2 Manager survey.

The survey was purpose built and drafted in its entirety by the study authors (available in the Appendix). Survey questions were designed to capture demographic information of responders, provide information regarding the current utilisation of AHAs at each response site

(including utilisation in dysphagia management) and finally explore perceived barriers and facilitators to AHA utilisation. A draft survey was then sent to 2 independent SLPs to review readability, content relevance, and perceptions of time taken to complete. Changes to content and language of the questionnaire were then made through joint discussion, to ensure suitability of questions in addressing study aims. A combination of forced choice and multiple-choice questions, prioritised/ordered lists, and open response questions were used to elicit information. Completion of some questions was contingent on other responses (i.e. skip-logic), therefore not all participants completed all questions. The first page of the questionnaire contained the participant information sheet, confidentiality and ethics information as well 3 mandatory eligibility and consent questions. All participants had to indicate they met all eligibility criteria and consented to participation in order to proceed into the survey. Completion of questions beyond this initial page was voluntary.

2.6.2.1 Participant recruitment.

The survey targeted clinicians in supervisor and/or manager roles only from Australian SLP services. This level of seniority was selected as a clinician of this level was deemed best able to comment on staffing and AHA utilisation practices on behalf of their service. The survey was disseminated using the electronic survey software program LimeSurvey (Schmitz, 2010). The initial survey link was sent out via multiple groups including: the SPA National Network which includes all members of the national association, as well as a website advert and newsletter, the Queensland Leaders in Speech Pathology group which forwarded the link to all clinicians working within Queensland Health, and a number of large national speech pathology

special interest groups via email. Participants were also encouraged to share the survey with other service managers (snowball sampling). The survey remained open for a period of 8 weeks.

2.6.2.2 Survey data analysis.

Following survey closure, results were exported to a Microsoft Excel (2010) spreadsheet for descriptive statistical analysis. Outcomes were reported as response frequency and expressed as percentage of the total number of participants, with a percent non-response (%NR) if the question was left unanswered by some participants. Limited responses were obtained via open response questions, therefore qualitative analysis of open responses was not conducted.

2.7 Results

2.7.1 Document analysis.

Sixteen possible documents were identified, however, the documents referred to on the Tasmanian and South Australia Health service websites were unable to be retrieved due to inoperable web-site links. Fourteen documents were retrieved and included in the final analysis, of which 7 were health service policy documents and 7 were professional position papers ranging in publication/release dates from 2003 to 2016. Summary details of the 14 documents are outlined in Supplementary Table 2.1.

Supplementary Table 2.1 Summary of document analysis

Document	Year	Quality *	Type	State/Country	Purpose
Royal College of Speech Language Therapists. RCSLT Policy Statement, Education and Training for Assistants	2003	I	Professional Position Paper	United Kingdom	Professional body stance on AHA utilisation
Australia Physiotherapy Association. Working with physiotherapy assistants or other support workers	2008	I	Professional Position Paper	Australia	Professional body stance on AHA utilisation
New Zealand Speech-Therapists' Association (NZSTA). The Speech Language Therapy Assistant Role	2008	I	Professional Position Paper	New Zealand	Professional body stance on AHA utilisation
Western Australia Country Health Service. AHA program: delegation, monitoring and evaluation of AHAs	2009	I	Health Service Policy	Western Australia, Australia	Provide guidance and framework for safe AHA delegation, enhance awareness of AHA workforce and improve confidence and consistency in delegation.
Health Victoria. Supervision and delegation framework for allied health assistants	2012	C	Health Service Policy	Victoria, Australia	Provide guidance and framework for safe AHA delegation, enhance awareness of AHA workforce and improve confidence and consistency in delegation.

Australian Capital Territory Health. Supervision and delegation framework for AHAs- a guide to governance in the ACT	2012	C	Health Service Policy	Australian Capital Territory, Australia	Provide guidance and framework for safe AHA delegation, enhance awareness of AHA workforce and improve confidence and consistency in delegation.
American Speech Language and Hearing Association. Speech Language Pathology Assistants.	2013	I	Professional Position Paper	United States of America	Professional body stance on AHA utilisation
New South Wales Health. Allied Health Assistant Framework	2013	C	Health Service Policy	New South Wales, Australia	Provide guidance and framework for safe AHA delegation, enhance awareness of AHA workforce and improve confidence and consistency in delegation.
Speech Pathology Australia. Working with support workers	2014	I	Professional Position Paper	Australia	Professional body stance on AHA utilisation
Occupational Therapy Australia. Position Paper- the role of allied health assistants in supporting occupational therapy practice	2015	I	Professional Position Paper	Australia	Professional body stance on AHA utilisation
Department of Health Wester Australia. Supporting and developing the AHA workforce	2015	C	Health Service Policy	Western Australia, Australia	Provide guidance and framework for safe AHA delegation, enhance awareness of AHA workforce and improve confidence and consistency in delegation.
Dietitian Association of Australia. Scope of practice-	2016	I	Professional Position Paper	Australia	Professional body stance on AHA utilisation

support staff in nutrition and dietetic services					
Allied Health Professions Office of Queensland. Allied Health Assistant framework	2016	C	Health Service Policy	Queensland, Australia	Provide guidance and framework for safe AHA delegation, enhance awareness of AHA workforce and improve confidence and consistency in delegation.
Queensland Health. Governance guidelines for allied health assistants	2016	C	Health Service Policy	Queensland, Australia	Provide guidance and framework for safe AHA delegation, enhance awareness of AHA workforce and improve confidence and consistency in delegation.

*Quality rating of comprehensiveness (Bowen, 2009): I = Incomplete, C = Complete

Content analysis of the 14 documents revealed 4 major themes across the documents, with supporting quotes provided in Table 2.1.

Table 2.1. Summary of themes determined from the policy document review.

Major Theme	**Sub-Category**	**Quotation Example**
Considering AHA position	Professions AHA roles can assist	*"Speech Pathology Australia supports a suite of initiatives to address workforce shortages including delegation to support workers." SPA (2014) pg. 4*
	Considerations for new & existing AHA positions	*"Steps to consider when establishing a new position: opportunity identification, planning, implementation, evaluation/review" NSW Health (2013) pg. 10*
Designated AHA scope of practice	Included/Excluded scope: general statements	*"An individual AHA's scope of practice is influenced by: their education, their knowledge and skills, their level of experience…their currency of practice, the level of supervision they receive, and the type and level of services provided by the facility in which they work" NSW Health (2013) pg. 15* *"Direct work with patients may include…implementing and facilitating therapy programs designed by professionals…patient education as prescribed by a health professional" Department of Health Victoria (2012), pg. 11* *"The following activities.... should not be included in AHA scope of practice: Informing type, frequency and duration of service; making clinical decisions...; making diagnosis; conducting assessments....; preparing individual treatment plans; interpreting referrals; developing goals.... discharge planning" AHPOQ, 2016, pg. 10* *"The association asserts that the following tasks are not suitable for delegation: assessment, differential diagnosis, clinical problem solving, therapy planning" SPA (2014) pg. 4*
	Included/Excluded scope: dysphagia specific	*"It is expected that the AHA will have advanced skills and abilities to: prepare for support of treatment and monitoring programs to promote safe swallow…. providing mealtime assistance…support safe swallowing…monitor patient' management of dysphagia" ACT Health (2012) pg. 66* *"Assist in provision of modified diet items for patients following discharge under the direction of supervising speech pathologist…. observe/supervise meals under the direction of the supervising speech pathologist" NSW Health (2013) pg. 20*

		"Participate in risk screening (malnutrition screening, nutritional and hydration risk during admission, other relevant screening programs" Dietitians Association Australia, (2007) pg. 4 *"Assessment and diagnosis of swallowing disorders and demonstration of swallowing strategies or precautions" NSW Health (2013) pg. 15 - are listed as excluded scope*
Recommended AHA training	Vocational training	*"Recognises the value of suitably trained and competent support workers and as such as contributed to the development of elective subjects particular to speech pathology practice in the Certificate IV Allied Health Assistance course." SPA (2014) pg. 4* *"While not mandatory, a relevant qualification (i.e. certificate IV in allied health assistance or equivalent) or willingness to work towards a relevant qualification would be well regarded" AHPOQ, (2016) pg. 12*
	Local and specific training	*"AHP supervising an AHA (must be) aware of the training programs that AHAs are participating in so that the AHP can facilitate the use of their knowledge and skill in a clinical context to meet local need" Department of Health Victoria (2012), pg. 15* *"In addition to formal training AHAs may need worksite role specific training to be competent and confident in particular work tasks" Department of Health Victoria (2012), pg. 16* *"The supervising speech pathologist therefore must develop key documents, guidelines and protocols to guide the practice of the support worker; and provide supervision, adequate training and establish the competency of the support worker to carry out the delegated tasks. " SPA (2014) pg. 5*
	Professional Development	*"It is important that AHAs are able to maintain their knowledge and skill base through ongoing participation in continuing professional development activities" ACT Health (2012) pg. 29* *"On an annual basis, as part of an AHAs performance appraisal, an AHA clinical skills assessment can identify areas of professional development" NSW Health (2013) pg. 39*
Delegation practices and AHP oversight	Principles and practice of delegation	*"When delegating AHP must consider whether activity is suitable to be delegated; the competence of the AHP to delegate; the individual AHAs skills, competence, attitudes and experience; whether an activity can be appropriately monitored and the nature of the task in the circumstances" Department of Health Victoria (2012), pg. 22* *"Delegation is the process by which an AHP allocates work to an AHA who is deemed competent to undertake the task" ACT Health (2012) pg. 31*

Responsibilities of the AHA	*"Understand AHP responsibility…, raise concerns…, seek support…, actively participate in supervision process, regularly participate in appropriate professional development" ACT Health (2012) pg. 16* *"The AHA has responsibility for raising any issues…should be aware of the extent of their expertise and scope of practice…."AHPOQ, (2016) pg. 19*
Responsibility of the Allied Health Professional	*"The supervising speech pathologist is responsible for the "duty of care" to the client and therefore would be liable in a civil action for damages (compensation) if they breach the duty of care" SPA (2014) pg. 5* *"AHAs are not autonomous practitioners and always work under the overarching auspice and clinical oversight of an AHP" Department of Health Victoria (2012), pg. 10* *"AHP…need to ensure they: are responsible for patient diagnosis…have clear understanding of AHA role…and knowledge, analyse clinical practice to identify tasks that could be completed by appropriate trained and supported AHA, provide support for AHA…" ACT Health (2012) pg 16*
Supervision	*"The purpose of clinical supervision is to ensure: the delivery of high-quality patient care…facilitation of learning and development, promotion of staff wellbeing by provision of support" NSW Health (2013) pg. 29* *"A support worker should only facilitate the delivery of speech pathology services if supervised by a speech pathologist." SPA (2014) pg. 5*

2.7.1.1 Theme 1: considering an AHA position.

Most AHP professions were included as benefiting from AHA support. Specifically, the SLP profession as a professional group which could be assisted by AHAs was explicitly stated in 9 documents (ACT Health, 2014, ASHA, 2013; DHWA, 2015, Health Victoria, 2012; NSW Health, NZSTA, 2008; 2013; SPA, 2014; Queensland Health, 2016; RCSLT, 2003). When considering the introduction of a new AHA role or supporting existing AHA positions, several health services policy documents (AHPOQ, 2016; ACT Health, 2014; Health Victoria, 2012; NSW Health, 2013; Queensland Health, 2016) and the ASHA (2013) provided guidance regarding factors to consider. ASHA (2013) stressed the importance of commencing appropriate training following the introduction of an assistant in a service and ensuring that the assistant is only employed when this is in the best interest of the consumer.

2.7.1.2 Theme 2: designation of AHA scope of practice.

The government policies provided limited specific detail regarding the AHA's primary area of practice and included scope. The policy for Queensland for example, outlined only a general statement that described the AHA's role as being "flexible, involving a mix of direct patient care and indirect support" (AHPOQ, 2016, pg. 2). Only one government (NSW Health, 2013) and one professional association policy (Dietitians Association of Australia, 2007) provided specific information on tasks considered to be within AHA scope of practice. Scope limitations/exclusions across health service policies were remarkably similar with regards to tasks that were considered outside of the AHA's scope. For example, tasks relating to clinical decision making (such as making diagnosis; deciding type; frequency or goals of care; completing initial assessments or interpreting referral information) were universally reported as

not appropriate to be delegated to an AHA regardless of education level or support structure (AHPOQ, 2016; ACT Health, 2014; DHWA, 2015; Health Victoria, 2012; NSW Health, 2013, Queensland Health, 2016). This was also reflected by the governing body for SLPs in Australia and New Zealand (NZSTA, 2008; SPA, 2014) which highlighted that assessment, differential diagnosis, clinical problem solving, and therapy planning remained the sole responsibility of the SLP regardless of clinical area.

Dysphagia specific statements were mentioned in only four documents (ACT Health, 2014; Dietitians Association of Australia, 2007; Health Victoria, 2012; NSW Health, 2013). The NSW policy (2013) made specific mention of the need for assessment of swallowing disorders and the demonstration of swallow strategies to remain the role of the SLP, despite this not being explicitly stated in the policy documents of the professional association or policy documents of other states. Dysphagia specific content was strongly linked to the completion of the Certificate IV in Allied Health Assistance (Australian Government, 2013) which includes a module on supporting dysphagia management and provides guidance regarding specific dysphagia related tasks that could be considered for instance meal time observation, monitoring of therapy completion and diet modification education (ACT Health, 2014; Health Victoria, 2012; NSW Health, 2013).

2.7.1.3 Theme 3: recommended AHA training.

All policy documents and statements from professional bodies within Australia highlighted the importance of AHA training. The health service policies reported that training could take the form of: (a) vocational training namely the Certificate IV in Allied Health

Assistance (Australian Government, 2013), or (b) ‘on the job’ training and competency attainment for task-based roles under the supervision of an AHP. There was a particular focus on vocational training such as Certificate III or Certificate IV in Allied Health Assistance (Australian Government, 2013) within the health service policies in an attempt to standardise training and competency requirements. Of note, the vocational training course was reported to include a module on providing support for dysphagia management (Health Victoria, 2012; NSW Health, 2013). However, while highly recommended, a vocational training course was not considered mandatory for AHA positions (AHPOQ, 2016). However, a push towards AHA positions undertaking nationally accredited training was specifically highlighted in the SPA position paper which stated assistants should “undertake nationally accredited training programs” (SPA, 2014, pg. 5). Limited information, however, was provided regarding exactly how to evaluate if an AHA was ‘competent’ to complete a delegated task, with several factors being reported to impact on the safety of task completion, such as acuity, environment, patient complexity and previous training (AHPOQ, 2016; ACT Health, 2014; DHWA, 2015; Health Victoria, 2012; NSW Health, 2013; Queensland Health, 2016; Western Australia Country Health Service, 2009).

Similarly, the importance of ongoing professional development and a focus on further learning was stressed in the majority of documents (AHPOQ, 2016; ASHA, 2013; ACT Health, 2014; DHWA, 2015; Health Victoria, 2012; NSW Health, 2013; NZSTA, 2008; Occupational Therapy Australia, 2015; Queensland Health, 2016; RCSLT, 2003). A recommendation for annual performance review to monitor key clinical skills and develop areas for professional development was explicitly recommended by the NSW Health (2013) policy document.

2.7.1.4 Theme 4: delegation practices and AHP oversight.

The principles and practice of delegation were clearly outlined, with delegation being defined as the process of passing on a designated task to an assistant with appropriate skill, knowledge and education to complete the task safely and in the best interest of the patient (NSW Health, 2013). The delegation process was discussed in detail in all government policies, with a particular emphasis on the importance of monitoring the completion of the delegated task, the importance of delegation within scope and the importance of ensuring appropriate training and support is available to conduct the delegated task safely (AHPOQ, 2016; ACT Health, 2014; DHWA, 2015; Health Victoria, 2012; NSW Health, 2013; Queensland Health, 2016; Western Australia Country Health Service, 2009). How to assess competency prior to delegation was however not outlined clearly in any policy.

Health service policies consistently reported that the responsibilities delegated to AHAs could vary depending on education level, knowledge and skills of the individual, level of experience and on-the-job training, recency of clinical practice, access to support and supervision and the type and level of services provided by AHPs in the facility (AHPOQ, 2016; ACT Health, 2014; DHWA, 2015; Health Victoria, 2012; NSW Health, 2013; Queensland Health, 2016; Western Australia Country Health Service, 2009). Similarly, health service policy strongly focused on the AHA responsibilities being limited to understanding own scope limitations, ensuring understanding of delegated instructions and participating actively in supervision and support seeking from the AHP (AHPOQ, 2016; ACT Health, 2014; Health Victoria, 2012; NSW Health, 2013; Queensland Health, 2016).

When considering the responsibility of the AHP, government policies consistently outlined that following delegation, the AHP remained responsible for informing the type, frequency and duration of service delivery, making clinical decisions, conducting assessments and preparing treatment plans as well as providing advice on discharge planning (AHPOQ, 2016; ACT Health, 2014; DHWA, 2015; Health Victoria, 2012; NSW Health, 2013; Queensland Health, 2016; Western Australia Country Health Service, 2009). Professional policies focused more strongly on the accountability of delegation, which in all instances remained with the delegating AHP (ASHA, 2013; Australia Physiotherapy Association, 2008; Dietitians Association of Australia, 2007; NZSTA, 2008; Occupational Therapy Australia, 2015; RCSLT, 2003; SPA, 2014).

The importance of supervision and continuous professional development was discussed in all government policy documents (AHPOQ, 2016; ACT Health, 2014; DHWA, 2015; Health Victoria, 2012; NSW Health, 2013; Queensland Health, 2016; Western Australia Country Health Service, 2009). Professional body position papers also supported the provision of supervision by an AHP, rather than more senior AHA to provide appropriate clinical support and evaluation (ASHA, 2013; Dietitians Association of Australia, 2007; NZSTA, 2008; Occupational Therapy Australia, 2015; SPA, 2014), including a guideline from ASHA, (2013) which recommended that an individual SLP not supervise more than two full time assistants. There were no stringent guidelines regarding frequency of supervision or recording of supervision sessions, nor were qualifications of supervisors clearly outlined.

2.7.2 Manager survey.

A total of 128 respondents initially opened the survey link, however, 84 were unable to complete the survey as they failed to meet the eligibility questions (not senior/managers within their service n=78 or did not currently work with adults in a hospital setting, n=6). A total of 44 SLPs indicated they were eligible for inclusion and completed the survey. Respondents were from 5 of the 8 states/territories of Australia (30% Queensland, 23% New South Wales, 18% Victoria, 9% Western Australia, 7% South Australia, 14% NR). More than one response was possible when providing information regarding type of SLP services provided, however, most responders provided SLP services in the inpatient-acute setting 84%, with 77% providing general outpatient services, 73% having services that included inpatient instrumental swallow assessment clinics, 68% including outpatient instrumental swallow assessment clinics and 55 providing rehabilitative SLP services (68% as an inpatient service and 57% as an outpatient service).

2.7.2.1 Current AHA utilisation.

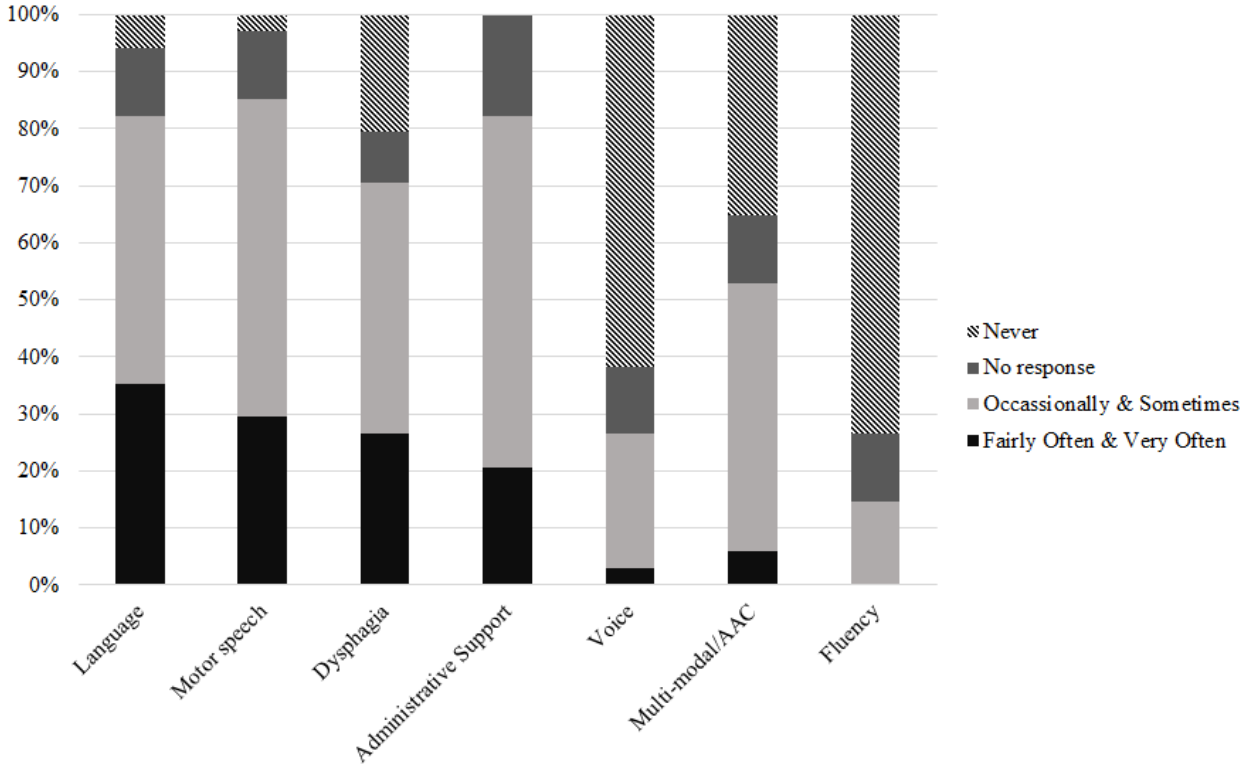
The majority of SLP managers (34, 77%) reported their service currently utilised AHA delegation (11% did not, 11% NR). Of the of managers who reported not using AHA delegation (n=5) in their services, all reported they would like to use AHA delegation in the future for administrative support (80%), language (80%), motor speech (80%), dysphagia (80%), fluency (20%) and multi-modal communication/AAC (60%).

2.7.2.2 AHA general information and training.

Of those currently delegating tasks to AHAs (n=34), the average number of AHA staff available in their services was 2.5 (SD 3.3, range 1-18) and the majority of services (n=18, 53%)

utilised AHAs which were shared across disciplines. Most (n=15, 44%) indicated their service required a minimum level of education and training for AHAs, while 32% reported having no minimum education requirement. For the 15 sites with known education minimum standards, 13 of these stated this was a vocational training course such as a certificate IV (Australian Government, 2013) in Allied Health Assistance or a year 12 equivalent in schooling (n=2). Of the managers using AHA delegation, 29% (10/34) had used AHA delegation for over 10 years, 21% for 5-10 years, 24% for 2-5 years and 9% for <2 years (15% were uncertain, 3% NR). More than one response was possible when asked where AHA delegation was currently being utilised, and the data revealed this was most frequently inpatient rehabilitation (79%), followed by the inpatient acute setting (53%) and less often in the outpatient-general setting or instrumental clinic settings (24%). SLP delegation by clinical practice area is outlined in Figure 2.1.

Figure 2.1. Frequency (%) of Allied Health Assistant delegation by clinical area



Prior to delegating any clinical tasks to an AHA, most managers (27/34, 79%) reported providing local training. Only 12% reported no local training was completed prior to delegation (9% NR). When asked to describe ways training was provided (multiple answers were allowed) most used individual training or observation with the SLP (76%), followed by supervised practice (61%), theoretical training (53%) and competency package completion (47%).

When asked ‘do you feel you are using your AHA workforce to their full potential’ only 32% (11/34) of the managers using AHA delegation felt that this was true. Managers felt that increased standardisation of the competency assessment process (65%) and training resources (56%) would improve utilisation, followed by improved standardisation regarding appropriate tasks to be delegated (53%). Fifteen managers (44%) felt that improved training for SLPs in delegation would improve delegation, while increased AHA staffing (41%) and increased AHA staff with vocational training (38%) were also suggested as possible improvements to utilisation.

2.7.2.3 AHA delegation in dysphagia.

Of the respondents currently utilising AHA delegation, 68% (23/34) indicated they delegated dysphagia related tasks to their AHAs, while 24% (8/34) did not (8% NR). Results regarding current delegation are summarised in Table 2.2. Five individuals did not respond to this question (11%NR). Facilitators and barriers to delegation in the area of dysphagia are summarised in Figure 2.2 and 2.3.

Figure 2.2. Factors facilitating delegation in dysphagia management

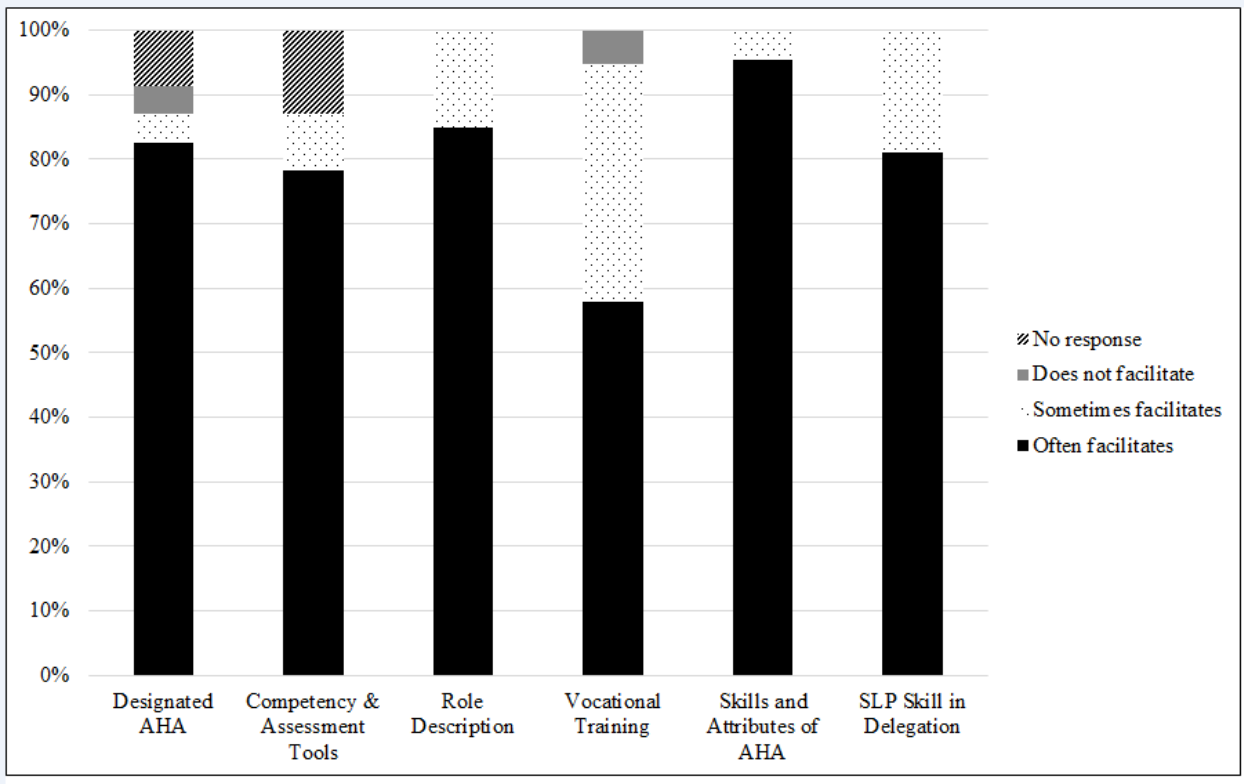


Figure 2.3. Factors limiting delegation in dysphagia management

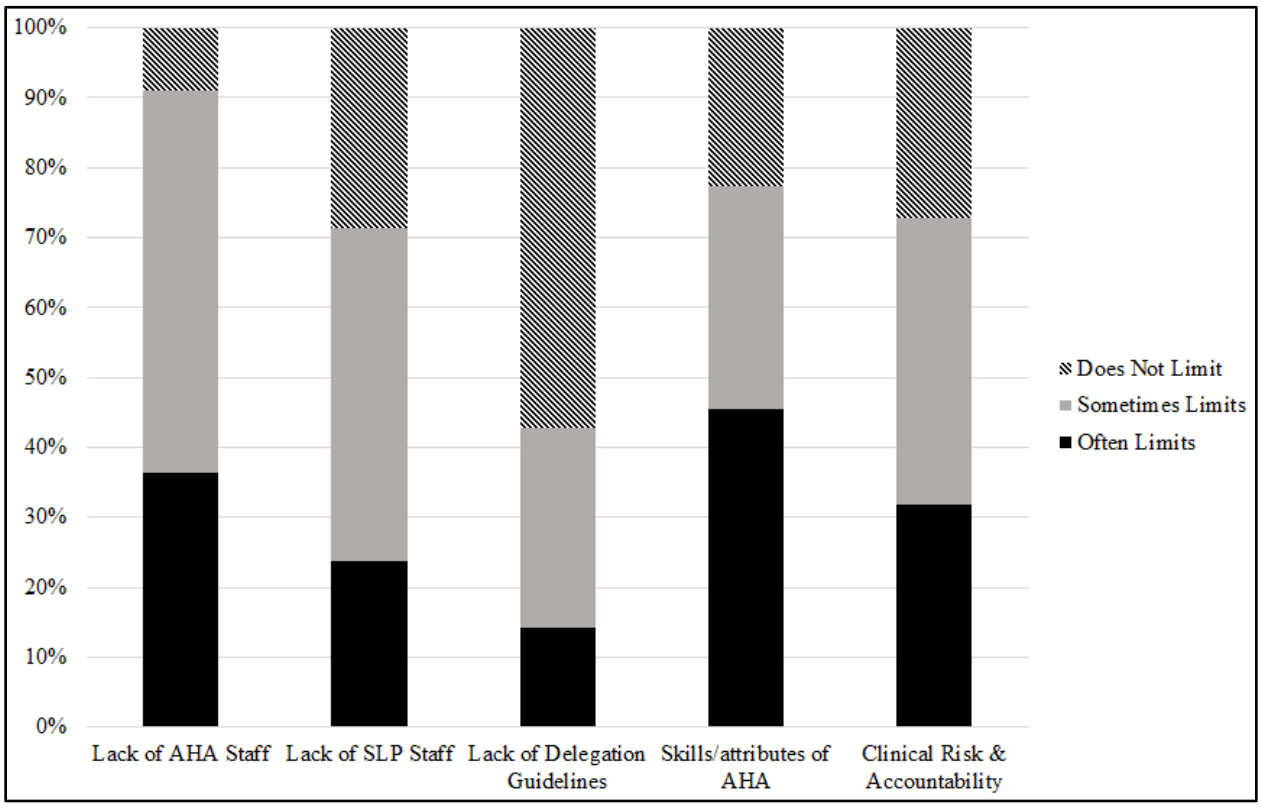


Table 2.2. Delegation practices of dysphagia specific tasks (N=39)

	Dysphagia Screening n (%)	**Safe Swallow Education n (%)**	**Modified Diet/Thickened Fluid Education n (%)**	**Mealtime Observation n (%)**	**Feeding Support n (%)**	**Assistance with Instrumental Clinic n (%)**	**Therapy Tasks n (%)**
Would never consider	5 (13)	5 (13)	2 (5)	1 (3)	1 (3)	3 (8)	1 (3)
Would consider in some instances	7 (18)	8 (21)	7 (18)	6 (15)	8 (21)	10 (26)	6 (15)
Would consider following local training	13 (33)	13 (33)	12 (31)	8 (21)	10 (26)	10 (26)	10 (26)
Currently delegating	7 (18)	6 (15)	11 (28)	16 (41)	13 (33)	5 (13)	14 (36)

2.7.3 Synthesis of results.

For overall analysis and synthesis of the results as per a mixed method design (Zhang and Creswell, 2013), the survey questions were mapped onto the themes emerging from the document analysis as per Supplementary Table 2.2. Overall, results from the policy document review and manager survey appear congruent.

Supplementary Table 2.2. Synthesis of document analysis and manager survey

Document Analysis Theme	Survey Questions	Survey Response Summary	Synthesis	Congruence
Scope of Practice	3A, 4A, 4B, 5A, 5B, 5M, 5F, 5m, 7A,	- 87.2% of managers reported current delegation to AHAs (n=34). 68% of managers currently delegating dysphagia related tasks to AHA (mealtime observation most common task) - 80% (n=4) would like to delegate to AHA in area of dysphagia if not currently utilising - 100% mangers would like to use AHA delegation if not currently utilising (n=5) - 32% (n=11) of managers currently utilising AHAs reported designated staff for SLP - On average services a 2.5 AHA staff available - Most common area of delegation was 'language' - Most common service for delegation was inpatient rehabilitation (n=30)	Policy does not preclude the use of AHA delegation for dysphagia related tasks. This is reflected in clinical practice with the majority of managers reporting current delegation in this area.	Agreement
Training	5C, 5c, 5G, 5H,	- 44% report minimum education requirement, most commonly vocational training (n=13) - 79% of managers report AHAs requires local training prior to receiving task delegation - Observation of task is most commonly reported training (n=26)	Training (particularly vocational training) is a core focus of health service policy. This is reflected in manager responses, with majority reporting a minimum education requirement and local training process	Agreement

Delegation and Oversight	5E, 5I, 5J, 6A, 6B	- 29% of managers' report utilising AHA delegation for more than 10 years - 28% of managers feel they are utilising delegation to its full potential - Standardisation of competency assessment process is reported most commonly (n=22) as factor that would improve utilisation - Skills and attributes of AHA most commonly facilitate delegation (n=15) - Insufficient AHA staff and skills and attributes of AHA limit delegation (n=4)	Policy and professional documents stress the importance of high-quality governance for delegation, particularly with regards to ensuring task delegated is within scope and capability of individual assistant and monitoring outcome of delegated task. This is reflected in manager responses as evidenced by identified need to increase standardisation of competency assessment process and the impact of AHA skills and attributes on facilitating and/or limiting delegation practices.	Agreement

2.8 Discussion

Policy documents and results of the manager survey appear to consistently support the use of AHA delegation, including in the SLP profession, as a response to increasing workforce pressures and growing demands on finite resources (Brooks et al., 2008; Duckett, 2005a, 2005b). Recommendations regarding task delegation and ensuring AHP oversight of delegated tasks were noted to be consistent within policy documents. However, SLP managers reported current under-utilisation of AHAs as a result of a number of barriers, with the individual attributes of the current AHA being the most commonly reported barrier. Thus, while increased utilisation of the AHA workforce is supported by policy, and in some settings is being implemented in practice, there remains perceived barriers to utilisation including a paucity of evidence to support guidance regarding training and competency requirements.

While policies outlining tasks that could not be completed by the AHA were consistently highlighted, the tasks that could be performed by the AHA and the responsibilities for these tasks were poorly defined and context dependent. Given that the health services for which the policies were designed cover a variety of inpatient, outpatient and rehabilitation services, it is not unexpected that role descriptions and references to area of practice need to be broad. However, the importance of clearly defined scope, including examples of ‘full scope’ is also supported by the literature (Kuipers, Hurwood, & McBride, 2015; Moran et al., 2015; Somerville et al., 2015; Stanhope & Pearce, 2013; Stute et al., 2013; Stute et al., 2014). A recent thematic analysis of responses from key focus groups regarding assistant delegation in rehabilitation teams highlighted ‘removing barriers to prevent staff from working to their full scope’ and ‘maintaining

role flexibility' as a key mechanism for successful implementation of an assistant model (Moran et al., 2015).

While the role and scope of AHAs in health currently remains broad and relatively poorly defined, review of relevant policy documents does not preclude the use of AHAs in dysphagia management provided that the delegated task does not fall into the 'clinical decision making' domain. In fact, policies such as those from NSW Health (2013), explicitly highlight that AHAs may have a role in mealtime observation and education in dysphagia specifically, and screening tasks across clinical domains. Furthermore, Australian SLP managers report currently using AHA delegation across clinical areas including dysphagia, with mealtime observation currently being the most delegated task within the dysphagia domain. Despite such utilisation, there remains a significant gap in defined tasks in the area of dysphagia management with only one state policy providing more detailed information regarding types of tasks which could be feasibly delegated in this domain (NSW Health, 2013). Delegation in high risk areas of clinical practice such as dysphagia must therefore be supported by strong training and competency guidelines.

Consistent guidelines regarding type of training required for AHAs (receiving delegated tasks) and AHPs (delegating tasks) were noted to be vague and lacking in specificity throughout the policy documents. The focus of policy documents appeared to be the increased promotion of vocational training specifically the certificate IV in allied health assistance (Australian Government, 2013) and professional development. This trend appears to be mirrored internationally with an increased focus of standardised training and competency standards also identified in the United Kingdom (Dunlop, 2010). Similarly, 13 managers reported minimum

education standards at their facility included the requirement for a vocational qualification and that increased number of AHA staff with vocational training qualifications would improve utilisation of the AHAs. The importance of training is highlighted by a systematic narrative review of ten studies which reported that high quality training is vital in the effectiveness of AHA models (Munn et al., 2013). However, although the importance of training in preparing AHAs for mealtime observations was highlighted in the recent paper by Schwarz and colleagues (2018), to our knowledge only one paper specifically investigated training processes in AHA delegation in relation to a dysphagia related tasks (Sharma et al., 2012). Similarly, while policy documents discuss the importance of ensuring the AHA was 'competent' to complete a delegated task, there was no information regarding how competency should be assessed or maintained. Issues with AHA competency may in turn limit delegation, due to lack of trust and concerns regarding task completion (Mackay & Nancarrow, 2005; Stute et al., 2014). This is particularly relevant in the dysphagia domain where perceived clinical risk increases the need for strong competency frameworks.

The role of the AHP in monitoring task completion and promoting high quality delegation was consistently reported in the health service policy documents. However, despite this strong focus, specific training and preparation of AHPs in task delegation is recognised as lacking. For instance, in current undergraduate programs delegation training may not be part of the core curriculum, which may result in AHPs being uncertain of delegation frameworks and monitoring requirements (Schmidt, 2013). Reduced awareness and training for the role of the AHP in delegation may then lead to reduced frequency and quality of delegated tasks (Stute et al., 2014). A qualitative analysis of four occupational therapy-based focus groups highlighted ambiguity

regarding overall responsibility for task outcomes following delegation and found that responsibilities delegated to assistants was variable and dependent on the individual practitioner, rather than clear guidelines (Mackey & Nancarrow, 2005).

2.8.1 Limitations.

This research has a number of limitations including the representative nature of the sample of survey responders. While SLP managers were specifically targeted for this study, this may have resulted in a narrowing of perspective regarding clinical utilisation of AHAs, as managers may not be privy to day-to-day delegation and training decisions. Furthermore, the document review focused only on Australian health services and English-speaking professional position papers which may not reflect practice patterns in other countries, where assistants may be more broadly utilised due to their higher educational requirements or more narrowly due to more recent introduction.

2.9 Conclusion

Australian policy documents and current practice patterns of SLP managers support delegation of dysphagia related tasks to trained AHAs. Adopting this form of service model may assist with managing the current and future clinical demands on SLPs with regards to dysphagia management. However, current barriers remain including lack of clear scope of practice guidelines, a lack of defined competency requirements and a reduced focus on how to assess and maintain AHA competency in this key clinical area. Gaps in current evidence also suggest there is a need for more systematic research into appropriate training and competency requirements of AHAs, and the research evidence to support both the safety and cost benefits of these models.

3 Chapter 3. Evaluating the Feasibility and Validity of Using Allied Health Assistants to Assist in Mealtime Monitoring of Dysphagic Patients

Schwarz, M., Ward, E.C., Cornwell, P., Coccetti, A., Kalapac, N. (2019). Evaluating the feasibility and validity of using trained allied health assistants to assist in mealtime monitoring of dysphagic patients. Dysphagia, 34(3), 350-359. https://doi.org/10.1007/s00455-018-9947-y

3.1 Contributions

Contributor	Statement of contribution
Author Maria Schwarz (Candidate)	Study Design – 60% Recruitment – 60% Data collection – 60% Statistical analysis – 60% Wrote the paper– 85%
Author Elizabeth Ward	Study Design – 10% Statistical analysis – 20% Edited the paper – 30%
Author Petrea Cornwell	Statistical analysis- 20% Edited the paper – 10%
Author Anne Coccetti	Study Design – 20% Recruitment – 10% Data collection – 20%
Author Naomi Kalapac	Study Design – 20%

	Recruitment – 40% Data collection – 20% Statistical analysis – 5%

3.2 Integration of Chapter 3 with Thesis

Demands on speech pathology resources are growing particularly in the area of dysphagia management as outlined in Chapter 1. Observing patients during a meal is common in clinical practice to ensure tolerance of diet and fluids in a more natural eating environment. Currently nursing staff are heavily relied upon to make informal observation during meals, as these observations are time consuming to complete and therefore costly when completed by a SP. Given the increasing demands on health services in general, including greater demands on nursing staff time, delegation of mealtime observations to a trained AHA is a growing consideration to ensure patient safety while reducing time demands on both speech pathology and nursing staff. As outlined in Chapter 2, the delegation of mealtime observations is currently the most common dysphagia related tasks being delegated to AHAs in the Australian healthcare setting (as reported by speech pathology managers) and is specifically endorsed by a number of health service polices as an appropriate area of AHA delegation. Despite clinical utilisation, there is a paucity of evidence guiding AHA training and competency standards for mealtime observations and limited evidence to suggest that the observations made by the AHA during the meal are accurate and valid when compared to a SPs observation of the same meal. Thus, the aim of this chapter is to present on the validity and clinical application of delegated mealtime observations within a healthcare setting.

The following manuscript, entitled “Evaluating the feasibility and validity of using AHAs to assist in mealtime monitoring of dysphagic patients” describes a mixed method design, which aimed to explore the feasibility and initial validity of using trained AHAs to complete structured mealtime observations when results were compared with a SP’s determination of mealtime difficulty. In addition, this study aimed to explore the cost benefits of using a delegation model and investigate the perceptions of both AHAs and SPs regarding this new role. This manuscript was published in Dysphagia in 2019 and is inserted as Chapter 3 of this thesis as published. For consistency throughout the thesis, formatting changes that have been made to align with the American Psychology Association Style guidelines (6th edition) and citations within the body of the text that have been referenced in previous chapters have been listed as subsequent citations within the text. Similarly, the abbreviations defined in previous chapters are listed on page xxvi and are not re-defined in this chapter. All references are listed at the end of this thesis.

3.3 Title: Evaluating the feasibility and validity of using trained Allied Health Assistants to assist in mealtime monitoring of dysphagic patients

Maria Schwarz, B.SpPath (Hons) [1, 2], Elizabeth C. Ward, BSpThy (Hons), Grad Cert Ed., PhD [2,3], Petrea Cornwell, B.SpPath, PhD [4,5], Anne Coccetti, B.SpPath (Hons) [1], Naomi Kalapac, B.SpPath [1]

(1) Speech Pathology and Audiology Department, Logan Hospital, Meadowbrook, Queensland, Australia

(2) The University of Queensland, School of Health & Rehabilitation Sciences, Brisbane, Queensland, Australia

(3) Centre for Functioning and Health Research, Queensland Health, Brisbane, Queensland, Australia

(4) Menzies Health Institute, School of Applied Psychology, Griffith University, Queensland, Australia

(5) Metro North Hospital and Health Service, The Prince Charles Hospital, Allied Health Research Collaborative, Brisbane, Queensland, Australia

3.4 Abstract

Purpose: Growing patient numbers, within a context of finite resources, has placed increased demands on dysphagia services in acute settings. Delegating some aspects of dysphagia management to other trained professional groups, such as allied health assistants (AHA), may help speech language pathology (SLP) service efficiencies. The primary aim of this study was to explore the feasibility and initial validity of using trained AHAs to complete structured mealtime observations of patients. The secondary aims were to explore costs and user perceptions.

Method: The study used a mixed method design. All AHAs who participated worked in the adult acute inpatient setting and were agreeable to participate; they successfully completed training and were deemed competent to use the observation tool. To explore validity, trained AHAs (n=7) and SLPs (n=5) conducted independent, simultaneous mealtime observations of 50 adult inpatients, using a structured observation form. Costs of AHA versus SLP time per average assessment were compared. Consumer perceptions were examined in semi-structured interviews with the AHA (n=5) and SLP participants (n=3).

Results: Exact agreement between AHA and SLPs on the overall pass/fail criteria was high (94%). Where exact agreement was not achieved, the AHA had made a more conservative decision. Salary costs and time savings for the SLP were identified. Interviews identified that both SLPs and AHAs perceived multiple positive personal and service benefits.

Conclusion: High levels of agreement in clinical decisions and positive staff perceptions support feasibility and initial clinical validity. This model may assist SP efficiencies in services with high patient demand.

3.5 Introduction

Unmanaged dysphagia can result in significant medical complications, as well as increased financial costs to both the individual and the health service (Altman et al., 2010; Bonilha et al., 2014; Davenport et al., 1996; Guyomard et al., 2009; Katzan et al., 2003; Patel et al., 2018). Hence, early and appropriate assessment and multi-disciplinary management of dysphagia is advocated to help mitigate these issues. In the majority of settings globally the Speech-Language Pathologist (SLP) adopts the primary role within the multidisciplinary team for the assessment and management of dysphagia (American Speech Language & Hearing Association, 2011; Smith Hammond & Golstein, 2006; Speech Pathology Australia, 2004). However, studies have highlighted that the role of the SLP in dysphagia management, particularly in the acute setting, is increasing - with significant impacts on workload and practice patterns (Armstrong, 2003; Code & Heron, 2003; Enderby & Petheram, 2002; Foster et al., 2016; Mustaffa-Kamal et al., 2012). This has ultimately impacted the time clinicians have available to engage in other services, and their ability to provide more time intensive dysphagia monitoring strategies, such as mealtime observation.

In the process of assessing dysphagia, the SLP typically completes a clinical swallow assessment, followed by an instrumental assessment as indicated (Speech Pathology Australia, 2004). Both these assessments involve exploring patient function in a short “snapshot” of time. Research has identified that a clinical dysphagia assessment by a SLP is often conducted between meals and lasts approximately 5.54 +/- 2.18 minutes (Clave et al., 2008). Similarly, data from videofluoroscopic assessments shows that they typically involve observing swallows between approximately 3 and 8 minutes of screening “on time” (Chau & Kuang, 2009; Kim,

Choi, & Kim, 2013; Morishima, Chida, & Watanabe, 2016). Due to the relative short durations of these studies, it is recognised all factors that can affect a patient's swallowing and mealtime functioning may not have been fully examined. Additional factors may include need for assistance, attitude towards eating, seating and positioning, dentition, time spent completing meal and behaviour (Miller & Patterson, 2014; Steele et al., 1997) which may impact tolerance of meals also cannot be fully assessed. Therefore, mealtime monitoring is advocated for some patients (Speech Pathology Australia, 2004). In light of SLP service demands, assistance with mealtime monitoring has typically been sought from nursing staff (Hines et al., 2011; Hines et al., 2016; Pelletier, 2004). However, considering that mealtimes may take as long as 43 minutes per person per meal (Simmons et al., 2006; Simmons & Schnelle, 2006), this impacts on the ability of nursing staff to complete continuous monitoring over an entire meal.

Recently alternative models which utilise Allied Health Assistants (AHA) for task delegation have grown in popularity (Lizarondo et al., 2010). An AHA is an individual who assists or provides any type of support to the work of a qualified allied health professional (Lizarondo et al., 2010). Within allied health practice, there is increasing evidence of the value of AHAs to assist with the delegation of duties in a range of practice areas including working towards rehabilitation goals through delegated therapy, supporting and supervising activities of daily living, and monitoring progress (Lizarondo et al., 2010; Stanmore & Waterman, 2007). The act of monitoring function to facilitate patient independence and safety has been delegated to AHAs in other areas of allied health, such as supervising bed exercise for physiotherapists (Davenport et al., 2015), therefore the role of the AHA could be feasibly extended to incorporate mealtime monitoring and communication of these observations to the SLP. The use of AHAs

specifically in the area of dysphagia management, however, has received limited systematic investigation to date. In research exploring the use of telehealth to conduct assessments of patients with dysphagia, a trained AHA was used in an assistant role to help the online clinician to complete their assessment (Ward & Burns, 2014). In preparation for that assistant role, AHAs were provided with basic training and orientation to the process of the clinical swallow examination in order to optimise their ability to assist the online clinician with the assessment (Sharma et al., 2012).

The aim of the current study was to explore the feasibility and validity of using trained AHAs to complete structured mealtime observations of dysphagic patients previously assessed by the SLP. The secondary study aims were to determine perceptions of both AHAs and SLPs regarding this new role, as well as providing preliminary evidence regarding direct cost comparisons. The overall objective of this research was to determine if AHAs can provide valid mealtime observations which could support the SLPs overall understanding of the patient's tolerance of a meal and therefore better inform dysphagia management.

3.6 Materials and Method

3.6.1 Participants.

There were 3 participant cohorts in this research: AHAs, SLPs and patients. All provided informed consent prior to participation and the study was conducted with full ethical approval (HREC/14/QPAH/509). To be eligible, the AHAs had to hold a position in the adult acute setting in which the research was set, have capacity to assist with speech pathology activities within their role, have obtained supervisors' approval to complete training, provide informed consent,

and have completed training specific to the completion of the MTOT (outlined below). They did not require any prior training or awareness of dysphagia management to participate. All available AHAs within the service were informed about the study and participation was voluntary. A total of 7 AHAs (two males, five females) agreed to participate from the available 10 staff (8 full time equivalent positions). Ages ranges from 35-57 years, 5 were working as a base grade assistant, while two were senior AHAs.

Five SLPs were recruited from a department of 14 staff (13 full time equivalent positions). To be eligible for participation staff were required to provide informed consent to participate, have more than 2 years' experience in dysphagia management, work primarily with the inpatient caseload in the service and have had some involvement in implementing the AHA training (such as providing theoretical training, assisting with competency attainment and providing supervision to AHA staff). All SLPs were female, aged between 26 and 38 years with between 2-12 years' experience managing dysphagic patients.

A total of 50 patients referred for concerns regarding dysphagia risk were recruited from the inpatient caseloads of the SLP department in a secondary metropolitan hospital. Patients were consented from the cohort of new patients referred to SLP service who: had received a clinical swallow evaluation (CSE) by a SLP within 12 hours prior to the mealtime observation and the SLP identified concern regarding the patient's ability to manage an entire meal. The clinical swallow evaluation consisted of a review of the medical history and patient record, an oromotor examination and a trial of food and fluids. Relevant strategies such as diet/fluid modifications, changes in position or self-feeding were then trialled by the SLP based on clinical judgment.

At the time of the CSE the SLP provided diet and fluid recommendations in addition to safe swallow strategies such as slow rate, fluid flush or compensatory strategies such as chin tuck for each patient as clinically appropriate. All patients were required to provide informed consent or have a substitute decision maker available to complete the consent process. Patients who were in intensive care, had a tracheostomy insitu, were under the care of a palliative care team or had advanced cognitive deficits were excluded as they were considered to be too complex for AHA delegation. The mean age of patients was 70.7 (SD 13.42, range 29-88), with the majority (36%) being admitted with a neurological condition. Demographic details are outlined in Table 3.3.

Table 3.3. Demographic information of patient population (N=50)

Demographic	N (%)
Gender	
Male	23 (46%)
Female	27 (54%)
Reason for Admission	
Cardiac	2 (4%)
Gastroenterological	5 (10%)
Injury/Fall/Trauma	6 (12%)
Multiple medical	6 (12%)
Neurological	18 (36%)
Respiratory	13 (26%)
Fluids Observed	
Thin	47 (94%)
Mildly Thick	3 (6%)
Diet Observed	
Full Diet	34 (68%)
Soft Diet	10 (20%)
Minced-Moist Diet	5 (10%)
Puree Diet	1 (2%)

3.6.2 Procedure.

The study procedure involved three stages. Firstly, the AHAs underwent 1 hour of training on how to conduct mealtime observations and use the mealtime observation tool and then completed a competency check using a purpose-built competency assessment tool. Once trained, both AHAs and SLP conducted simultaneous observations of the cohort of 50 patients. Finally following completion of the 50 observations, semi-structured interviews were conducted with AHAs and SLPs to explore perceptions of the training and service model.

3.6.2.1 AHA training.

Each participating AHA was required to attend a 1-hour theoretical training session. Participants did not require any prior knowledge or skills regarding dysphagia, therefore all participants were provided with the same level of introductory content in this session. This session was delivered by a SLP and included content relating to the basic theory of dysphagia; signs to suggest a patient is having difficulty during mealtimes; inspection of the oral cavity for residue; information regarding collecting and reading pulse oximetry measures; and documentation / reporting procedures. It also involved familiarisation with the content and observation process of the Mealtime Observation Tool (MTOT). The MTOT was a purpose-built tool developed for this research by two experienced SLPs and reviewed by other clinicians working in the service. It was designed to assist mealtime observations and enable documentation of findings for later communication to the SLP to facilitate clinical decision making. Although the tool was not psychometrically validated, face validity was optimised during its development through the inclusion of items validated by both clinical experience and research evidence. Specifically, this included evidence in the literature and from clinical

experience regarding the predictive features of aspiration including wet voice, voluntary cough and cough when swallowing (Clave et al., 2008; Smith Hammond & Goldstein, 2006; Martino et al., 2004; Speech Pathology Australia, 2004). The use of pulse oximetry is recognised as an adjunct to clinical assessment (Clave et al., 2008; Ramsey et al., 2003), with oxygen desaturation of greater than 2% has shown to be predictive of aspiration (Clave et al., 2008; Ramsey et al., 2003). As fluctuations in oxygen saturation are observed clinically to occur during a mealtime, the decision was made to consider a drop of 4% the criteria to indicate possible mealtime difficulty, to avoid over-referral caused by detection of minor saturation changes. Similarly, to avoid over referral due to identification of a single cough during a meal, a clinical criterion of three or more coughs in sequence or over the course of the meal was set to help identify patients at more risk of mealtime difficulty.

The MTOT was designed as an observational tool for identifying key behaviours suggestive of dysphagia risk or mealtime difficulty during a meal. The MTOT is completed entirely by the professional completing the observation, with an overall pass/fail rating indicating presence of dysphagia risk factors (such as coughing, increased time for meal completion or pooling of food/fluids). The MTOT consists of three sections (see appendix). Section one allows the delegating SLP to add information regarding the diet and fluid recommendations, contact precautions, special considerations and the meal being observed. Section two prompts the AHA to conduct observations prior to the meal including ensuring the patient is alert and upright, prompting the patient to wear dentures and placing the pulse oximeter on the patient to record a baseline reading. Section three allows the AHAs to record observations during the meal

including observation of coughing, difficulty chewing, oxygen saturation, amount of food and fluid consumed, length of time to finish meal and presence of oral residue.

An immediate fail on the MTOT was recorded if three or more occasions of coughing or throat clearing were observed following eating or drinking or if baseline oxygen saturation level dropped by more than 4%. If a fail was recorded the meal was removed from the patient, the nurses were alerted that the patient needed to remain nil by mouth awaiting repeat SLP review, and results were clearly documented in the medical record by the AHA using a standard documentation template. Other observations in section three such as taking an increased time to finish food, not finishing food and drinks, or having trouble chewing did not result in an immediate fail. AHAs were encouraged at all times to raise significant concerns to the SLP immediately and seek advice re progressing with MTOT observation.

Following the 1-hour training, each AHA observed a SLP complete 1 mealtime observation and score the MTOT. AHAs then independently conducted 3 mealtime observations and scored the MTOT under the observation of a SLP. An AHA was determined competent using the observation tool if their MTOT results during the 3 observations matched those of the SLP. Within the training program there was opportunity for AHAs to complete additional joint observations if the AHA or SLP felt this was required.

3.6.2.2 Simultaneous patient observations.

To examine the validity of the AHA's observations using the MTOT, both an AHA and a SLP conducted a series of 50 joint mealtime observations. The AHA and SLP conducted the

observation at the same time, sitting at the patient's bedside. Both the AHA and SLP were aware to conduct the observation independently and were instructed not to compare documentation or discuss the outcome of the observations until the completion of data collection. Diet and fluid consistencies consumed by the patient and use of compensatory strategies were determined by the outcomes and recommendations set by the CSE conducted by the SLP in the 12-hour period prior to the mealtime observation session. During the mealtime observation session, the AHA and SLP simultaneously, but independently, completed the MTOT observation form based on direct observations during that session. Observations by both the SLP and the AHA documented on the MTOT form were then collected for data analysis. In this research model, once data was collected, the AHA could then discuss the observation process and the findings with the patients managing/treating SLP. It was responsibility of the managing/treating SLP to make any required clinical changes to management or conduct a further swallow review as warranted. Overall duration of the mealtime observation session was also recorded.

3.6.2.3 Staff interviews.

Following the completion of all 50 patient observations, all consenting AHAs and SLPs underwent a phone interview. The interviews were conducted within a general inductive approach to qualitative analysis (Creswell & Creswell, 2013; Thomas, 2006). A semi-structured interview guide was developed to elicit information from the AHA and SLP participants regarding (a) their perception of this new role (b) any concerns they had regarding scope of practice or patient risk (c) perceptions of training received, and (d) perceived benefits/limitations/concerns of this new role. Prompt questions were used to help elicit further information for each question. Interviews took approximately 20 minutes (range 9 min – 18 min)

and all were conducted by the study's second author, who was experienced in conducting research interviews and had not been involved in the direct implementation of the study within the service. The interviews were audio recorded and transcribed verbatim for later analysis.

3.6.3 Analysis.

Data was collected on the completion of training for all AHAs. From the simultaneous observations of the 50 patients, the level of agreement between the overall score (pass/fail) and the individual elements of the observation tool as recorded by the AHAs and SLPs was totalled and then analysed using both the percentage of exact agreement (%PEA) and the level of agreement using Kappa statistics. A priori level of >80% exact agreement and a Kappa value of >0.6 indicating substantial or greater level of agreement (McHugh, 2012) was set as a clinically acceptable level of agreement for this activity. Where any disagreements in the MTOT decisions (overall decision or component decision) occurred between the SLP and AHA, an error analysis was conducted. As the SLP was considered the "expert" in this study design, their MTOT findings were considered as the "correct" answer for the error analysis. AHA's results which differed from the SLPs findings were considered as a potential error.

Only the direct costs associated with either a SLP or an AHA performing the mealtime assessment was of interest in this study. The time to complete the mealtime observations was averaged in minutes. Costs relating to the average clinical time spent to complete the mealtime observation was calculated using Queensland Health wage rates from 2017 for HP3.8 (for the SLP position) and the OO3.4 level for the AHA (available at

https://www.health.qld.gov.au/hrpolicies/wage_rates/health-practitioners) with 30% added as on-costs. All costs were expressed in Australian dollars and rounded up to whole dollar amounts.

Interview data was transcribed verbatim and then analysed following the procedure summarised by Creswell and Creswell (2013). This process involved a general read through of all verbatim interviews, coding the interview information into descriptive ‘chunks’ which were further analysed into ‘themes’ as they emerged from repeat reading and then developing ‘narrative passages’ with themes and sub-categories including pertinent quotes to highlight each example (Creswell & Creswell, 2013). Thematic coding was performed by the first author (MS), and subsequently checked by 3 other members of the study team (EW, PC, NK). Once final themes were obtained, the summarised themes were sent to participants for review and approval (Creswell & Creswell, 2013). No participants provided feedback requesting changes to the summaries and therefore no further modification of themes was undertaken.

3.7 Results

3.7.1 Training.

All 7 AHAs successfully completed training. After 3 observed sessions all 7 AHAs reported they were comfortable with the mealtime observation procedure and the MTOT and were determined by the SLP to be able to use the MTOT. Although there was opportunity for AHAs to complete additional joint observations if needed, this was not required for any participant.

3.7.2 AHA and SLP agreement on the MTOT.

The SLP-AHA pair attending for each observation varied. The 5 participating SLPs completed an average of 7 observations (SD 5.4), while the 7 participating AHAs completed an average of 10 observations (SD 11.3). When completed by the SLP, the MTOT result indicated 41 of 50 (82%) as having passed the mealtime observation. Of the 9 patients that failed; the SLPs failed 5 due to observed coughing and 4 due to multiple concerns (Table 3.4). Examination of the medical history of the patients who the SLPs passed/failed, revealed the highest rate of failure was observed in patients with gastroenterological concerns, respiratory conditions and those admitted post injury/fall or trauma (Table 3.4). All patients who were determined by the SLP to have failed the MTOT were placed nil by mouth and referred back to their managing/usual SLP for ongoing management.

Table 3.4. Failure reason on MTOT in patient populations

	Pass	Fail	Percent fail rate (%) [a]	Failure Reason
Neurological (n=18)	17	1	6	Multiple concerns
Respiratory (n=13)	9	4	31	Coughing and multiple concerns
Injury, Fall or Trauma (n= 6)	5	1	17	Coughing
Multiple medical conditions (n= 6)	6	0	0	Not applicable
Gastroenterological (n= 5)	2	3	60	Coughing and multiple concerns
Cardiac (n=2)	2	0	0	Not applicable

[a] All Pass and Fail ratings are based on the overall pass/fail rating provided by the speech pathologist as this was considered the 'true' rating based on expert opinion

Comparisons of the overall result from the MTOT recorded by the SLP with that recorded by the AHA revealed 94% exact agreement (k = 0.82) indicting high degree of agreement. This consisted of exact agreement between the SLP and AHA for 38 patients identified as having "passed" and 9 observations in exact agreement with identified "failures". Disagreement between the SLP and the AHA decisions was identified on only 3 (6%) of patients and in all cases the AHA was noted to have made a more conservative decision (i.e. rating the observation as a "fail"

while the SLP rated it as a “pass”). Analysis of the reasons for the AHA’s “fail” decision revealed the AHAs had noted 2 instances of noted coughing and 1 instance due to observed desaturation. All 3 patients had known respiratory compromise and these cough/desaturations were not considered by the SLPs as indicators of aspiration as regular coughing was observed prior to commencement of oral intake.

The breakdown of the SLP-AHA level of exact agreement on the specific items on the MTOT can be found in Table 3.5. Partial data (individual item results) from one patient was lost due to a data entry error; however remaining results (which included the overall pass/fail rating) from this patient were included in analysis. Ratings of coughing noted to have the lowest level of agreement (80%). In the 10 cases where disagreement was observed the SLP stated nil coughing where the AHA reported coughing in 5 cases and in 5 where the SLP stated coughing and AHA reporting nil coughing. Importantly when disagreement was evident, this did not affect the pass/fail outcome (i.e. coughing was observed less than three times throughout the meal). Exact agreement on all other specific items was greater than 90%.

Table 3.5. Percent Exact Agreement (PEA) between the Allied health Assistant (AHA) and Speech Pathologist (SP) on the mealtime observation tool (MTOT) rating criteria

	AHA (n=50)	SP (n=50)	Total ratings in agreement [b]	Kappa	PEA (%)
Overall Result Overall decision (pass/fail)			47	0.82	94%
Pass decisions	38	41	38		
Fail decisions	12	9	9		

Individual Item Result [b]	AHA (n=49)[a]	SP (n=49)[a]	Total ratings in agreement [b]	PEA (%)
Coughing present	14	14	39	80%
Chewing difficulty present	3	2	47	96%
Increased time to finish meal	2	1	46	94%
Residue present	0	0	49	100%

[a] One section of results removed from analysis due to missing data on AHA MTOT record form.

[b] Total ratings of agreement include agreement on both presence and absence of indicators described.

3.7.3 Time and cost data.

The mean time to complete the mealtime observation session was of 27.5 minutes (SD=8.3, range 15-50) per patient. To complete a MTOT of approximately 30 minutes a SLP would cost $30, while a registered nurse would cost $28, compared to an AHA costing approximately $19. This allows an approximate cost saving of $11 per observation when

compared to a SP and $9 compared to a registered nurse. Once this clinical model was implemented in clinical practice there would be approximately 5-10 minutes of SLP time discussing and reviewing the MTOT results with the AHA, hence it could conservatively be assumed that this would provide the SP with 20 minutes to complete other clinical duties. Cost and time associated with training was not included in analysis as this was considered part of usual professional duties for both SLPs and AHA (i.e. attending professional development opportunities).

3.7.4 Staff perceptions.

Due to staffing changes over the course of the project (participants leaving the organisation or moving to other positions), 2 SLPs (female, with more than 5 years' experience) and 1 AHA (senior female) were unavailable to participate in the post data collection interviews, leaving 3 SLPs and 6 AHAs available to be interviewed. Three key themes emerged from the interviews of the SLPs and AHAs seeking their perceptions on AHAs completing mealtime monitoring in the acute hospital setting. The first theme was centred on "training" which was the dominant theme and reflected the perceived benefits of training, and the high quality of the training procedures. The second theme related to scope of practice and highlighted the importance of role awareness and scope limitations for the AHAs, as well as the limitations of AHA delegation. Finally, the third theme related to process and operational components which focused primarily on the practicalities of conducting the MTOT, including concerns regarding equipment use and documentation.

3.7.4.1 Training.

The dominant theme to emerge from the interviews was the quality and benefits of the training structure used in this study which improved AHA skill and confidence. This theme highlighted the value of having both theoretical and practical components incorporated in the training program. As well as demonstrating the importance of side-by-side observations at the beginning of the training to improve AHA confidence, minimise concerns regarding missing key components and allowing time to familiarise the AHA with a new clinical area. *AHA1- "I felt I guess more comfortable having the speech pathologist there watching the mealtime observations as well…just while I was learning"; AHA 4- "I was really nervous when I first started doing it by myself. And now I'm not"; SLP 1 "the newer AHAs…might have struggled with confidence a little bit…but I think once they had one or two...mealtime observations…they were fine."*

In addition, the theme of training affirmed that the training was at an appropriate level for AHAs with varying levels of experience. *AHA 2 "I felt that they were very well done…we sat down and we watched the clinicians do it and then the clinicians kind of sat there with us…made me feel quite, we were on the same track with patients, so that was really good."* The training theme also demonstrated that with appropriate training the AHA's role can be expanded and this is beneficial for both the AHA and SLP. In particular, several AHAs expressed feeling valued and satisfied through their ability to take on new tasks. *AHA 1 "I guess satisfying being able to provide that service to the speech pathologists…and improve the…care that our patients are receiving"*; *AHA 2 "It's a nice feeling to know that you've maybe helped somebody"*; *AHA 2- "because there are a lot of things that AHAs could contribute…we just need up-skilling and*

training”; *AHA 5 “the mealtime observation can take a while…so they (SLP) can go on to do other things”*

3.7.4.2 Scope of practice.

The second main theme, termed “scope of practice” centred on the AHA being aware of their role limitations, as well as the SLP being conscious of the type of patients AHAs were delegated to complete mealtime observations. Both AHAs and SLP highlighted that while AHA delegation can be expanded there are limitations to their scope of practice, which were clearly identified and maintained by the AHAs. *AHA 3 “our scope is not nearly as broad as you guys (SLP)”*; *AHA 2 “we’ve got to put the halt on probably a long time before they (SLP) would”*; *SLP 1 “they (AHA) would be more cautious and therefore would give you a higher fail rate”*

The AHAs also reported that they were initially cautious about the extended scope of practice given the inherent risk of dysphagia management but felt that their confidence was greatly improved by the training they received. *AHA 1 “just worrying about…missing something”*; *AHA 4 “I think if I didn’t have the proper training then It would have been a lot different outcome…if you were sent there and not enough training, I think I would have panicked.”* SLPs focused on scope of practice from a delegation perspective, highlighting that they are conscious of the type of patients who may be appropriate for delegation. *SLP 2 “There will certainly be patients that I won’t allocate to an AHA…feeling that they’re inappropriate”*

3.7.4.3 Process and operational context.

The third theme, “process and operational context” was noted to be broad and included both inter-professional relationships, as well as more practical components such as documentation and using equipment. In particular the interviews highlighted the importance of having a strong working relationship and collegial support between the SLP and AHAs, which many AHAs reported improved their confidence and assurance in the model. *AHA 4 “And also they’re very helpful and if you’re in doubt you can just ring them and um, they’re there for you. So that’s another really good aspect that you’re not out on your own you know"; SLP 3 “I think it’s also important just to remind them that if they’re unsure about something then they can always call us (SLPs).”*

Equipment issues were raised by several AHAs particularly with regards to oxygen meters, which highlights that such clinical tasks represent a new area for many AHA and may require further focus in the training domain. *AHA 1- “technology issues with things like oxygen meters…so I guess a very good learning experience as well”*; *AHA 6- “was completely new to using that equipment…a bit more training around managing those sort of things.”*

Documentation and the importance of a structured form was raised by the SLP, while the AHAs focused more on practical concerns such as where to file documentation in the medical record. *SLP 2 “I think that it (form) talks the AHA through things quite thoroughly and triggers all of those potential flags”*; *AHA 1 “bit of confusion…where the informations meant to go in the progress notes”*

3.8 Discussion

The current findings support the study aims, identifying that trained AHAs were able to complete mealtime observations with high levels of agreement with SLP decisions regarding patient mealtime safety. In addition, both SLPs and AHAs perceived that with a solid training and implementation framework, delegation of mealtime observations for patients with dysphagia in the acute setting was feasible and valid. In contrast to nurse led mealtime observation, the data presented here support that within structured model that incorporates staff training, delegation of mealtime observations to AHA staff is safe and valid.

Overall, a low level of disagreement was observed between the AHA and SLP rater decisions, and all errors in judgment were created by more conservative decisions made by the AHA. It is acknowledged that conservative decisions could lead to over referrals which can contribute to the clinical load of the SLP. However, within the current study the potential over referral rate was only 6%. This could easily be compensated for within the time saved by the SLP not directly completing the mealtime observations. Furthermore, within a fully functioning clinical model (and not a controlled research design), the AHA and SLP would be able to discuss the results of the observation, allowing the SLP to consider the MTOT results with their own knowledge of their patient, to inform their clinical decision regarding further management. Under-identification did not occur, and hence the patient safety of this model was supported. While a full cost analysis of this service model was not conducted, having an AHA perform mealtime observations can contribute to time and cost savings for SLP. To complete a MTOT of approximately 30 minutes, the AHA would cost $11 less than an SLP per assessment and $9 less than nursing staff. The SLP then has approximately 30 minutes per delegated assessment to

allocate to other aspects of SLP service delivery that may become de-prioritised in acute services due to dysphagia management demands (American Speech Language and Hearing Association, 2011; Code & Heron, 2000; Clave et al., 2008; Mustaffa-Kamal et al., 2012).

The participant interviews revealed that the AHAs felt the training and support provided within this model were integral to helping them achieve the necessary skill development and confidence to complete this newly delegated task. In a systematic review of studies investigating the role of assistants in healthcare, it was identified that standard processes, a collaborative learning model, and competency assessment support the success of training programs (Munn et al., 2013). Hence the characteristics of the training program, use of the MTOT observation tool, the focus on collaboration and collegial support during learning and delegation, and the final competency sign off from the training SLP, are potential key factors contributing to the overall success of the current model. The notion of clear role delineation and building trust in delegation models between professionals has also been identified as key factors in the success of AHA delegation models (Nancarrow et al., 2013) . In the current study, SLPs reported increased confidence in delegating to the AHA knowing they had been trained and would work within their scope and raise concerns if identified. Similarly, the AHAs felt supported by the SLP, identified positive personal and professional outcomes and were able to discuss concerns or issues due to strong working relationships and knowledge of their role limitations.

The results of this study provide initial evidence for the validation of AHA completed mealtime observations, however, this study should only be considered as initial feasibility data and further research to fully validate and cost this model is now warranted. The MTOT was

developed specifically for this research and as such is currently not a validated tool. Therefore, any use of this tool outside of a research context should be monitored closely, and formal validation and testing of this sort of tool is now required. It should also be noted that although a clinical cohort of 50 patients was recruited, the majority of these patients were observed during a mealtime trial of unmodified diet and fluids with or without compensatory strategies, and/or potentially following upgrading from more restricted diets. Clinically this would translate to using the AHA to confirm patient mealtime management status prior to discharging a patient from SLP services, or to check the status of patients with mild dysphagia who have significant co-existing morbidities (e.g. significant respiratory deficits) which could impact mealtime capacity/tolerance. It is, however, acknowledged that the accuracy of the AHA observations may differ with other patient populations. This issue needs further investigation to better inform the use of AHAs and mealtime monitoring accuracy with more severely dysphagic patient populations.

Interpretation of the true impact of the training component of the study was also limited by lack of formal evaluation of AHA knowledge pre and post training. Further, evaluation of the training component and its adequacy is also limited by the nature of the clinical population studied (low level of acuity). Requiring only three joint observations prior to AHA competency sign off may also not be appropriate in all settings, as AHAs come from a variety of skills and previous experiences. Furthermore, the study design did not include a comparator group of non-trained AHAs, which further limits any conclusions regarding the adequacy of the training component. Finally, variation in numbers of observations completed by each AHA and SLP and completion of side-by side observation may impact level of agreement. Future investigations on

the clinical outcomes and impact on decision making for patients post MTOT would strengthen these initial findings. For services considering this model of care, a full formal economic analysis, consideration time for training and impacts of over-referrals would also be valuable.

3.9 Conclusion

Using AHAs to complete mealtime observations was found to be comparable to having a SLP complete the observation. Consistent training and the availability of SLP support and guidance in the delegation process appear to be important contributors to high levels of agreement. This study provides initial support for the role of AHAs in dysphagia management and their potential for increased task delegation in the acute hospital setting. In addition, this study offers a method of maintaining service delivery models including dysphagia monitoring without increasing the demands on SLPs. Further validation of this clinical model is required with patient cohorts with more significant swallowing impairment**.**

4 Chapter 4. Exploring the Validity and Feasibility of Using Allied Health Assistants to Conduct Dysphagia Screening for Low Risk Patients within the Acute Hospital Setting

Schwarz, M., Ward, E.C., Cornwell, P., Coccetti, A., D'Netto, P., Smith, A., Morley-Davies, K. (Submitted). Exploring the validity and feasibility of using Allied Health Assistants to conduct dysphagia screening for low risk patients within the acute hospital setting. *American Journal of Speech Language Pathology.*

4.1 Contributions

Contributor	Statement of contribution
Author Maria Schwarz (Candidate)	Study Design – 60% Recruitment & Data collection – 40% Statistical analysis – 60% Wrote the paper– 85%
Author Elizabeth Ward	Study Design – 10% Statistical analysis – 20% Edited the paper – 15%
Author Petrea Cornwell	Study Design – 10% Statistical analysis – 20% Edited the paper – 20%
Author Anne Coccetti	Study Design – 40%

	Recruitment & Data collection – 10% Edited the paper – 5%
Author Pamela D'Netto	Recruitment & Data collection – 40% Statistical analysis – 10%
Author Aimee Smith	Recruitment & Data collection – 5%
Author Katharine Morley-Davies	Recruitment &Data collection – 5%

4.2 Integration of Chapter 4 with Thesis

The early identification of presence or absence of dysphagia risk, using a dysphagia screening tool as described in Chapter 1 is vital in clinical practice to prevent complications of dysphagia such as aspiration pneumonia and therefore reduce healthcare related costs and complications. Given the high demand on speech pathology services, the task of dysphagia screening has traditionally been completed by nursing staff using a substitution model. However, nursing staff are also experiencing growing demands and restrictions on available resources, therefore reducing their capacity to conduct dysphagia screening. In the context of growing demand and finite resources in many areas of dysphagia management, health service policy is increasingly supporting the use of task delegation to trained AHAs as described in Chapter 2. Using trained nursing staff to complete dysphagia screening created a precedent to support the dysphagia screening as a task which could be delegated to a trained AHA. However, the accuracy and feasibility of introducing dysphagia screening under a delegation model has not been investigated despite 33% of SP managers reporting they would consider delegating this task following local training in Chapter 2.

To determine the validity and feasibility of utilising an AHA to conduct dysphagia screening under a delegation model a prospective cohort study was conducted. This study investigated the accuracy of AHA decision making with regards to pass/fail criteria of a dysphagia screening tool, in comparison to the SPs pass/fail rating. In addition, once accuracy of decision making had been established this study investigated the clinical application and feasibility of introducing AHA dysphagia screening under a delegation model within the acute hospital setting. Therefore, the current chapter presented data to support the clinical validity and feasibility of using trained AHAs to assist with screening low risk dysphagia patients to assist the SP's caseload management by eliminating the need for the SP to review low risk patients with nil indicators of dysphagia risk.

The following manuscript entitled "Exploring the validity and feasibility of using Allied Health Assistants to conduct dysphagia screening for low risk patients within the acute hospital setting" describes a prospective cohort study, which aimed to explore the feasibility and initial validity of using trained AHAs to complete dysphagia screening in an acute hospital setting when results were compared with a speech pathologist. This manuscript has been submitted for publication in the American Journal of Speech Language Pathology and is inserted as Chapter 4 of this thesis assubmitted. For consistency throughout the thesis, formatting changes that have been made to align with the American Psychology Association Style guidelines (6th edition) and citations within the body of the text that have been referenced in previous chapters have been listed as subsequent citations within the text. Similarly, the abbreviations defined in previous chapters are listed on page xxvi and are not re-defined in this chapter. All references are listed at the end of this thesis.

4.3 Title: Exploring the validity and feasibility of using Allied Health Assistants to conduct dysphagia screening for low risk patients within the acute hospital setting

Maria Schwarz, B.SpPath (Hons) [1, 2], Elizabeth C. Ward, BSpThy (Hons), Grad Cert Ed., PhD [2], [3], Petrea Cornwell, B.SpPath, PhD [4], Anne Coccetti, B.SpPath (Hons), GradDipBusAdmin [1], Pamela D'Netto, BAppSc(MedSc), MSpPathSt [5], Aimee Smith, B.SpPath (Hons) [5], Katharine Morley-Davies, B. SpPath, B. Soc.Sc [6]

(1) Speech Pathology and Audiology Department, Logan Hospital, Meadowbrook, Queensland, Australia

(2) The University of Queensland, School of Health & Rehabilitation Sciences, Brisbane, Queensland, Australia

(3) Centre for Functioning and Health Research, Queensland Health, Brisbane, Queensland, Australia

(4) Menzies Health Institute, School of Allied Health Sciences, Griffith University, Queensland, Australia

(5) Speech Pathology Department, Wide Bay Hospital and Health Service, Queensland, Australia

(6) Speech Pathology Department, QEII Hospital, Metro South Hospital and Health Service, Queensland, Australia

4.4 Abstract

Purpose: To determine the validity and feasibility of Allied Health Assistants (AHAs) completing dysphagia screening for low risk referrals and at-risk patients, under a delegation model.

Method: All AHAs worked in the adult acute inpatient settings across three hospital sites, completed training and competency evaluation in dysphagia screening prior to conducting independent screening. The overall screening recommendation (pass/fail) was based on results from two components of the Yale Water Swallow Protocoland EAT-10 questionnaire. To examine validity of decision making, AHAs (n=7) and Speech Language Pathologists (SLPs) (n=8) conducted independent, simultaneous dysphagia screening on 51 adult inpatients classified as low risk/at-risk referrals. To examine feasibility, AHAs independently screened a further 48 low risk/at-risk patients, with SLP clinical swallow evaluation conducted only for patients who failed the screen.

Results: Validity testing confirmed exact agreement between AHA and SLPs on overall pass/fail screening criteria for the first 51 patients was 100%. Exact agreement for the two tools was 100% for the EAT-10 and 96% for the water swallow test. In the feasibility phase (n=48), 58% of patients failed AHA screening, with only 10% considered false positives on subsequent SLP assessment and nil identified false negatives.

Conclusion: AHAs demonstrated the ability to accurately conduct this dysphagia screening process, on a cohort of low risk patients. Implementing the model provided a low rate of false negatives in those who passed screening. Data supports the clinical validity and feasibility of using trained AHAs to assist with screening low risk dysphagia patients.

4.5 Introduction

Dysphagia is a common complication in a number of medical conditions such as stroke and as part of the ageing process (Roy et al., 2007; Smithard, 2016). As the population ages, it is anticipated that prevalence of dysphagia will increase in the acute hospital setting. This is exemplified by a study by Leder and Suiter (2009), looking at 4038 referrals from hospitalised inpatients which noted that 70% of referrals received for swallow evaluation were for patients over the age of 60. The early identification and targeted management of dysphagia are vital to reduce the risk of complications such as infection (Langdon et al., 2008; Perry & Love, 2001; Ueda et al., 2004), distress, malnutrition and dehydration (Foley et al., 2009) as well as the long term cost of complications to both the individual and the health service (Altman et al., 2010; Bonilha et al., 2014; Patel et al., 2017; Westmark et al., 2018). The identification and management of dysphagia requires a multi-disciplinary approach, as revealed in a survey of 154 speech language pathologists (SLPs) who reported working primarily with patients with dysphagia in a multi-disciplinary context (Rumbach et al., 2017). While the role of the SLP focuses primarily on the clinical and instrumental assessment of swallowing (Rumbach et al., 2017), nursing staff in particular play a pivotal role in supporting the goals and objectives related to dysphagia recovery. This includes closely monitoring and enforcing recommendations (such as modified diets and liquids), understanding the role of the SLP, and ensuring communication regarding dysphagia management is accurate and complete (Tanner & Culbertson, 2014).

The identification of dysphagia in the acute hospital context is typically divided into a screening phase which identifies the presence or absence of dysphagia, a clinical assessment by a specialist professional (usually the SLP), and a diagnostic or instrumental assessment as

indicated (Cichero & Murdoch, 2006; Logemann, 1998; Mankekar, 2015; Speech Pathology Australia, 2004). Swallow screening is not a diagnostic tool and refers most commonly to a brief swallow trial using water (Antonios et al., 2010; Bours et al., 2009; Cichero et al., 2009; DePippo et al., 1992; Perry & Love, 2001; Smith, Lee, O'Neill, & Connolly, 2000; Speyer, 2013; Suiter & Leder, 2008; Trapl et al., 2007) which follows identification of dysphagia risk indicators. A number of screening tools are available (Bours et al., 2009; Daniels et al., 2012; Kertscher et al., 2014; Speyer, 2013) and although there is some variability in design and use, each aims to achieve the same goal, which is to screen for signs that the patient is ‘safe’ or ‘not safe’ to swallow food and liquids (Smithard, 2016). The outcome of the screen therefore identifies the need for further swallow assessment in the event of a binary rating of ‘not safe.’ Screening does not evaluate the biomechanics and physiological underpinnings of swallowing. This can only be achieved through an instrumental swallow assessment, such as either a videofluoroscopic swallow exam (VFSS) or a fiberoptic endoscopic evaluation of swallowing (FEES) (Rumbach et al., 2017).

While screening for dysphagia may be performed by a SLP, in order to improve service efficiency and patient flow the use of nursing staff to complete dysphagia screening is common in clinical practice (Cichero et al., 2009; Hines et al., 2016; Titsworth et al., 2013; Trapl et al., 2007). The dysphagia screening tool selected for nurse-led dysphagia screening is typically a local decision and depends on target population, time and cost constraints and professional preferences. However, there remains a wide variety of tools available with differences in reliability and validity (Bours et al, 2009; Daniels et al., 2012; Jiang et al., 2016; Kertscher et al., 2014). A systematic review of screening tools utilised in the neurological population suggests

that tools including a water swallow component, combined with pulse oximetry using coughing, choking and voice alterations as endpoints currently provide the best indicators of dysphagia risk (Bours et al., 2009; Daniels et al., 2012; Jiang et al., 2016; Kertscher et al., 2014). Early nurse-led dysphagia screening, using a reliable and valid tool has been shown to successfully identify dysphagia risk in a number of patient populations with a high degree of accuracy reported (Cichero et al., 2009; Hines et al., 2016; Trapl et al., 2007). In addition, nurse-led dysphagia screening was identified in a systematic review to reduce incidence of chest infections in patients with acute neurogenic dysphagia when compared to patient populations who were not screened for dysphagia (Hines et al., 2016). Furthermore, nurse-led dysphagia screening has been shown to help avoid unnecessary referrals to the SLP (Hines et al., 2016; Martino et al., 2004). A commonly utilised dysphagia screening tool is the Yale Water Swallow Protocol which includes an exclusion criterion, followed by a 3-ounce water swallow challenge (Suiter & Leder, 2014). Similarly, while commonly used as a patient self-report measure, the Eating Assessment Tool (EAT-10) (Belafsky et al., 2008) is a tool that also demonstrated strong validity in predicting dysphagia and aspiration risk in multiple studies (Cheney et al., 2015; Ercilla et al., 2012; Plowman et al., 2016; Rofes et al., 2014) and is therefore included as a screening tool within the current study.

Models of care where other professional groups conduct routine dysphagia screening can assist SLP services to maximise efficiencies and re-allocate time to high risk caseloads such as stroke (Meng et al., 2000). For instance, dysphagia screening performed by a registered dietitian as part of standard nutritional care was noted to demonstrate excellent agreement between the

SLP and dietitian (k=0.80), as well as reducing workload for the SLP by referring only those patients determined to be at risk of dysphagia (Huhmann et al., 2004).

While nurse-led models have strong supporting evidence, in many services increasing demands on nursing staff impact their capacity to engage in routine dysphagia screening. A recent qualitative interview study of 44 nurses, identified that due to increasing demand and patient complexity, nursing staff and managers were increasingly required to prioritise duties and resources, leading to a reduction in quality of care (van Oostveen et al., 2015). Similarly, increasing job demands and reduced resources strongly impact on nursing staff as they are reporting exhaustion, disengagement and burnout (Aiken et al., 2002; Demerouti et al., 2001). This presents a potential opportunity to re-evaluate distribution of roles, such as dysphagia screening to other professional groups in an effort to reduce the clinical workload and demand for professional groups such as nursing and SLPs.

One option to reduce work demands for both SLPs and nursing staff which has not yet been explored extensively in the literature, is the utilisation of trained Allied Health Assistants (AHAs) to conduct dysphagia screening under a delegation model. As defined by Lizarondo and colleagues (2010), an AHA is an individual who assists or provides any type of support to the work of a qualified allied health professional. In relation to AHAs, AHA delegation is defined as the process by which an allied health professional delegates an activity or task to an AHA who has been identified to poses an appropriate level of knowledge and skill to complete the delegated task safely, within the context in which it is to be completed (Allied Health Professions Office of Queensland, 2016). Within the context of the Australian health service, AHA delegation

is gaining momentum in the field of dysphagia management, with both policy and SLP staff identifying that dysphagia tasks are within the AHA's scope of practice (Schwarz, Ward, Cornwell & Coccetti, 2019). Speech Pathology Australia (2015) suggests that AHAs should not be responsible for patient selection, diagnostic assessment, changing or developing a treatment plan, identifying intervention goals, drafting reports, or discharging patients. However, it does not explicitly state that screening tasks are outside of their scope of practice. Similarly, the description by Lizarondo and colleagues (2010) highlights that the AHA's role includes administering clinical services and communicating with the SLP. Therefore, it is feasible to suggest that AHAs can have a role in dysphagia screening. However, unlike nurse or dietitian dysphagia screening (outlined above), the AHA must perform screening under a delegation structure, with the delegating clinician, in this instance the SLP, retaining the responsibility for the individual patient.

The delegation of clinical tasks to AHAs currently remains under-utilised by allied health professions. In a survey study of 1112 Allied Health Professionals from 27 organisations, respondents reported that 24% of their time was utilised on tasks which could be safely delegated to a trained assistant including providing treatment and conducting administrative tasks (Somerville et al., 2018). Similarly, utilisation of AHAs in the area of dysphagia management has only recently gained attention in areas such as supporting telepractice including supporting the telehealth clinician to conduct an oromotor examination, position the patient appropriately and provide assistance with feeding during a clinical swallow assessment performed remotely (Sharma et al., 2012) and mealtime monitoring (Schwarz et al., 2018). However, the validity and feasibility of dysphagia screening completed by an AHA has not, to our knowledge been

explored in the literature. Thus, the clinical implications of delegating dysphagia screening to an AHA remain unclear. The current study therefore aimed to examine the validity and feasibility of using trained AHAs to conduct dysphagia screening of low risk patients in the inpatient acute care setting. The delegation model specifically identified only ‘low risk’ patient referrals as being appropriate for delegation, as it was recognised clinically that a proportion of these referrals often do not require further SLP services. Using AHA screening to evaluate low risk referrals was considered a potential model to reduce referral numbers that require full SLP assessment.

4.6 Materials and Method

4.6.1 Participants.

There were three participant cohorts in this research: AHAs, SLPs and patients. All provided informed consent (or for patients unable to provide informed consent their authorised decision maker completed the consent process) prior to participation in the study. The study was conducted with full ethical approval (HREC/15/QPAH/486). The study was conducted across three clinical sites, two of which were medium sized secondary hospitals in a metropolitan area and the third a smaller hospital in a regional setting. Approximately 13 AHA positions are employed across these facilities, with a total of seven AHAs (2 males and 5 females) agreeing to participate. As per the Allied Health Professions Office of Queensland’s AHA framework (2016) AHAs are encouraged to complete the Certificate IV in Allied Health Assistance. The certificate IV in Allied Health Assistance is a vocational training program standardised nationally and accessible through government run vocational training providers (Technical and Further Education providers). The Certificate IV in Allied Health Assistance is not a mandatory requirement for employment, therefore to be eligible for inclusion in this study the AHA staff

member was only required to meet the role requirements for a full scope AHA (Allied Health Professions Office of Queensland, 2016, pg. 3-4) and successfully complete locally designed competency relating to dysphagia screening (as described in training section below) as supported by the Allied Health Professions Office of Queensland's AHA framework (2016). As outlined by the framework, a full scope AHA may 'provide a defined range of clinical screening…as delegated and allowed by testing guidelines' (Allied Health Professions Office of Queensland, 2016, pg. 3) following task specific training. Additional inclusion criteria were that each AHA had to be working in the acute inpatient hospital setting, be willing to participate in the training component of the study and demonstrate competency in performing the dysphagia screening task. In addition, eight SLPs were recruited across the three sites. To be eligible for participation, SLP staff had to have more than two years' experience in dysphagia management, work primarily in an inpatient acute caseload, and have had some involvement in implementing the AHA training. All SLPs were female.

A total of 100 patients were initially recruited from across all three sites for the two phases of this research, however, one patient later withdrew consent following screening and was removed from data analysis. To be eligible for inclusion, patients had to be considered 'low risk' based on information received by the SLP service at each site. A 'low risk' referral was determined by the SLP following their clinical decision making using the exclusionary elements defined in Table 4.6. All low risk referrals were identified from the list of current SLP referrals received on the days data collection took place. Referrals could be received from medical teams, nursing staff, other Allied Health Professionals or from proactive SLP screening of the patient ward list for at risk patients. Decisions regarding suitability of referrals for delegation to the

AHA was made by a SLP following brief review of medical record and/or referral information. As is the role of the SLP within an AHA delegation model, it was the SLPs decision to identify a referral as “low risk” and appropriate for AHA delegation, based on available information.

Table 4.6. Summary of elements considered when making a ‘low risk’ classification

Clinical Decision Making	- AHAs possesses appropriate knowledge, skill and competence to complete dysphagia screening safely - Context of dysphagia screening is appropriate for AHAs - The SLP has no concerns regarding the safety of the patient and the AHA during dysphagia screening
Medical History	- No known history of dysphagia (including known need for diet/liquid modification) - No history of confirmed stroke - No history of advanced cognitive deficits - No history of head and neck cancer - No previous diagnosis of severe degenerative neurological conditions
Current Medical Status	- Not receiving current supplementary or enteral nutrition - No restriction on sitting upright in bed - Appropriate level of alertness - Not nil per oral as per medical orders - Not in the intensive care unit/critical care - No tracheostomy - Not receiving palliative management

SLP- Speech Language Pathologist
AHA- Allied Health Assistant

4.6.2 Screening procedure.

The screening process was selected to meet local clinical needs, available training resources, and to ensure compliance with AHA delegation model requirements outlined in local government frameworks (Allied Health Professions Office of Queensland, 2016). Screening was designed to enable a final overall pass/fail rating to be determined, based on the outcome of independently completed tasks including: (1) identification of the exclusion criteria and

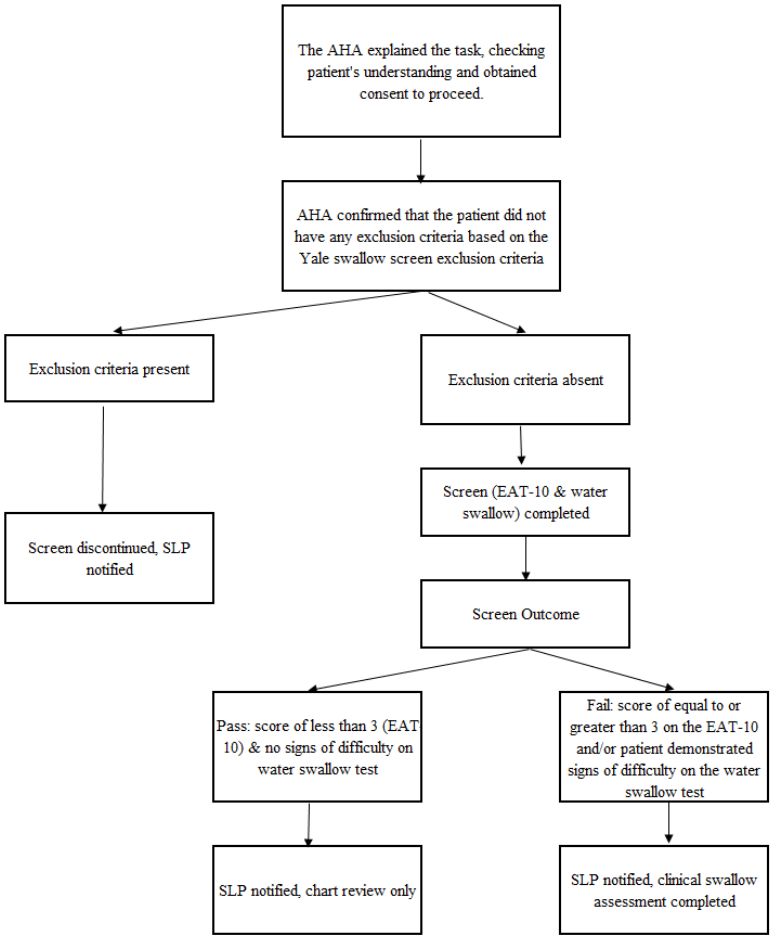
completion of the water swallow components of the Yale Water Swallow Protocol (Leder & Suiter, 2014; Suiter et al., 2014), and (2) the EAT-10 (Belafsky et al., 2008).

The complete Yale Water Swallow Protocol (Leder & Suiter, 2014; Suiter et al., 2014) consists of identification of any exclusion criteria (inability to remain alert, eating a modified diet, existing enteral feeding, head of bed restrictions, presence of tracheostomy or NPO by medical orders), a brief cognitive screen, an oromotor or oral mechanism examination, and finally a 3-ounce water swallow challenge. Researchers report high sensitivity (between 96.5% and 100%) for predicting aspiration when compared with instrumental swallow assessment, as well as identifying that the Yale Water Swallow Protocol is a good predictor of a patient's ability to tolerate solids (Suiter & Leder, 2008). Suiter and colleagues (2014) report that the cognitive screen and oral mechanism assessment components do not contribute to the overall pass/fail criteria of the screen, rather they provide information on the odds of aspiration risk (Suiter et al., 2014). As AHAs are not permitted to make clinical decisions and are only allowed to complete delegated tasks (Allied Health Professions Office of Queensland, 2016), the clinical decision making regarding cognitive capacity and oromotor function components of the Yale Water Swallow Protocol could not be included in the AHA screening process. However, the AHA was trained to identify remaining elements of the Yale Water Swallow Protocol l exclusion criteria (Leder & Suiter, 2014; Suiter et al., 2014) including level of alertness and presence of nasogastric tube. Identification of any exclusion criteria resulted in a rating of 'fail' prior to completion of the water swallow test. The water swallow test component of the Yale Water Swallow Protocol l involved giving the patients 3 ounces of water to drink 'slowly and steadily without stopping.' A fail was recorded if the patient was unable to drink the entire volume in

sequential swallows without stopping and/or if signs of aspiration such as coughing, choking or throat clearing were observed up to two minutes post, as per Leder and Suiter (2014).

The EAT-10 is a symptom-specific, swallowing outcome tool designed for clients to rate the degree of self-perceived swallowing impairment (Belafsky et al., 2008). Each of the 10 questions is rated on a 0–4 ordinal scale (0=no impairment, 4=severe problem). The overall score is calculated as the sum of the 10 questions, providing a score of 0–40, where higher scores indicate greater perceived impairment (Belafsky et al., 2008). The AHA asked each patient to rate their level of impairment on the scale of 0-4 by reading out each item of the tool aloud or asking the patient to read the form independently. A fail was recorded if the patient scored $\geqslant 3$ in total as per Belafsky and colleagues (2008). Using these screening components, the AHA completed the dysphagia screening process (as per Figure 4.4) and determined final pass/fail screening decision.

Figure 4.4. Delegated dysphagia screening procedure



4.6.3 AHA training.

Although all AHAs met the Queensland Health professional training requirements for a full scope AHA (Allied Health Professions Office of Queensland, 2016), it was not assumed that the AHA participants had any prior experience or knowledge regarding the management of patients with dysphagia. Hence, each participating AHA was required to attend a 1-hour theoretical training session that was specific to the issue of dysphagia and dysphagia screening, as well as reviewing written resources. The theoretical training included content relating to a

basic understanding of swallowing and definition of dysphagia, signs of penetration/aspiration, and specific information regarding how to perform the screening tools. The AHA then observed a SLP conduct the entire screening procedure with a patient and then demonstrated the screening procedure on at least two patients under the supervision of the SLP. Competency to perform the task was determined by the supervising SLP on the second supervised completion using a purpose-built competency assessment tool (appendix). The assessment tool identified the AHA's ability to: (1) demonstrate knowledge of fundamental concepts of dysphagia screening, (2) obtain relevant equipment and resources required to conduct screening, (3) communicate appropriately with the patient regarding the screening procedure, (4) ensure appropriate and safe positioning of self and patient, and (5) complete the delegated task as per instruction, including correct identification of pass/fail criteria, clear documentation and feedback to patient and SLP following task completion. Within the training program there was opportunity for AHAs to complete additional sessions observed by the SLPs if required to achieve competency.

4.6.4 Procedure.

The study was performed as a prospective cohort design, completed in two phases.

4.6.4.1 Phase 1: validity.

In phase 1, the AHA and SLP performed simultaneous swallow screens to investigate the validity of AHA completed dysphagia screening. A total of 51 low risk referrals were screened simultaneously by the SLP and AHA across the three sites. The AHA led the screening process including introducing themselves to the patient, describing the process and study information, collecting consent, and guiding the patient through the items of the screening tools. The SLP completed only the written components of the tools for later comparison and arranged a suitable

time to conduct a clinical swallow examination after the screening was complete if the patient 'failed.' Information was collected regarding overall pass/fail agreement as well as item-by-item agreement between AHA and SLP on each component of the screening process.

4.6.4.2 Phase 2: feasibility.

In the second phase of this study the SLP delegated appropriate low risk patients to the AHA for independent dysphagia screening. A total of 48 low risk patients were screened independently by the AHA across the three sites. The AHA collected the delegated task and performed the dysphagia screening procedure as outlined above. If the patient passed screening, no further SLP intervention was required. However, a chart review was conducted by a member of the research team approximately three months after initial screen to determine if any dysphagia associated complication had occurred following screening (for example re-referral to speech pathology for ongoing concerns re swallow function, documented malnutrition, documented aspiration pneumonia). If any issues were identified, then that patient's result was classified as a false negative screen.

If the patients failed AHA screening, the AHA would alert the SLP as soon as possible and the SLP would make a suitable time to conduct a clinical swallow examination within the next 24-48 hours based on site specific prioritisation guidelines. The clinical swallow examination (CSE) included a careful review of the medical record and collection of case history information, an evaluation of cranial nerve function and an observation of eating and drinking including observation of compensatory strategies (such as diet modification) as required (Gonzalez-Fernandez et al., 2013; McAllister et al., 2016; Mustaffa-Kamal et al., 2017; Speech

Pathology Australia, 2004). Based on the outcome of the CSE completed by the SLP the accuracy of the screen was determined. A true positive (accurate fail) was identified if the SLP confirmed that the patient required modified diet and/or liquids based on the CSE only. No instrumental assessment was conducted or used in the validation part of this study. The AHA's decision to "fail screening" was only validated against decisions made by a SLP following their CSE. This is because both screening and a CSE depend on observed clinical behaviours only.

For the purposes of this research only - and to provide the reader some information on the severity of the presenting dysphagia in the cohort tested in this study, the SLP also noted an impression of mild, moderate or severe dysphagia in the clinical medical record following their CSE assessment. Ratings of severity of dysphagia were defined using local service criteria based on a functional rating of impairment and the SLP's clinical impression based on the level of impairment across each item of the clinical swallow examination. Individuals were classified as mild dysphagia if they had issues such as extreme fatigue limiting oral intake or required one level of either diet or fluid modification. Individuals with moderate dysphagia required both texture and fluid modification or significant compensatory strategies, while severe dysphagia was defined as significant modification of diet and liquids or recommendation for non-oral feeding options. A false positive was identified if the SLP reported that the patient did not require diet/fluid modification and was documented to have nil swallowing issues/dysphagia.

4.6.5 Analysis.

Demographics were reported descriptively, with differences between the demographics of the patient cohorts in Phase 1 and Phase 2 explored using Chi Squared tests (for categorical data)

and independent sample t-tests (for interval data). Training outcomes for the AHAs were analysed with descriptive statistics only. To determine construct validity and inter-rater reliability, the level of agreement between the overall screening decision (pass/fail) and the individual elements of the observation tool as recorded by the AHAs and SLPs was reported as a percentage of exact agreement (%PEA). A priori level of >80% exact agreement was set as a clinically acceptable level of exact agreement for this activity based on similar protocols (Ward et al., 2012). In addition, Kappa values were calculated for further interpretation of level of agreement using the criteria set by Landis and Koch (1977) (0.0-0.2 slight agreement; 0.2-0.4 fair agreement, 0.4-0.6 moderate agreement, 0.6-0.8 substantial agreement, 0.9-1 almost perfect agreement). Where any disagreements in the dysphagia screening decisions (overall decision or component decision) occurred between the SLP and AHA, a sub analysis of the differences was conducted. As the SLP was considered the "expert" in this study design, their dysphagia screening findings were considered as the "correct" answer for the error analysis. From the feasibility phase, percentages were used to report proportion of patients who passed/failed AHA screening and the accuracy of the pass/fail rating compared to SLP assessment (if completed). Individuals that passed dysphagia screening were considered as not requiring SLP intervention, thus acting as a measure of caseload/demand reduction, as without delegated screening these individuals would have required SLP intervention.

4.7 Results

4.7.1 Training

All seven AHAs successfully completed training. After two observed sessions all seven AHAs reported they were comfortable with the dysphagia screening procedure and were

determined by the SLP to be competent in the completion of the tool. No additional joint observation sessions were required for any participant.

4.7.2 Patient participants.

A total of 99 participants were included for data analysis across the two phases. Most participants were admitted to hospital with a respiratory condition, with other common reasons for admission being surgical intervention and multiple medical conditions (see Table 4.7 for details). Respiratory conditions included diagnosed pneumonia and chronic obstructive pulmonary disease, need for surgical intervention included both orthopaedic and general surgical intervention, while admissions for multiple medical conditions included patients with falls and functional deterioration. Demographics of the total cohort and the cohorts in each phase of the study is summarised in Table 4.8. Statistical analysis revealed no significant difference in the cohorts involved in Phase 1 or 2 for gender or age ($p = 0.132$, $p = 0.156$ respectively). Patient admission reason and indicator for dysphagia screen differed significantly between phases due to clinical variation ($p = 0.012$). During phase 1 reason for admission and dysphagia screening were most commonly due to presence of respiratory condition, which was much lower during phase 2 of the study ($p = 0.00$).

Table 4.7. Admitting diagnosis

Admitting Condition/Diagnosis	**n**	**%**
Respiratory Condition	42	42.4
Surgical Management	17	17.2
Multiple Conditions	16	16.2
General Medical Condition	6	6.1
Neurological Condition	5	5.1
Gastrointestinal Condition	4	4.0
Functional Decline	3	3.0
Cardiac Condition	2	2.0
Sepsis	2	2.0
Accident/Trauma	1	1.0
Pain	1	1.0

*Note: All participants, (n=99)

Table 4.8. Demographic information

	All Participants	Participants Phase 1	Participants Phase 2
Number of included participants	99	51	48
Male	48 (48.5%)	28 (54.9%)	20 (42%)
Female	51 (51.5%)	23 (45.1%)	28 (58.3%)
Age	76.6 (range 28-98, SD 11.3)	76.3 (range 52-98, SD 9.4)	76.94 (range 28-97, SD 13.17),
Reason for admission			
Respiratory	42.4%	58.8%	25%
Surgical Management	17.2%	7.8%	27.1%
Multiple Conditions	16.2%	17.6%	14.6%
Other	24.2%	15.8%	33.3%
Indicator for dysphagia screen			
Respiratory Condition	24.2%	39.2%	8.3%
Dysphagia Risk Reported	20.2%	5.9%	35.4%
Respiratory Condition & Frail/Elderly	14.1%	19.6%	8.3%
Frail/Elderly Patient	13.1%	5.9%	20.8%
Other	28.4%	29.4%	27.2%

4.7.3 Phase 1: validity.

Comparison of overall result from the dysphagia screen pass/fail criteria recorded by the SLP and the AHA revealed 100% exact agreement. Both AHA and SLP screening indicated that 39 patients failed overall (76.5%). Kappa statistic for overall screening decision was 1. AHA's screening results revealed 96% exact agreement (Kappa = 0.926) with the SLP for the components of the Yale Water Swallow Protocol and 100% exact agreement (Kappa = 1) with EAT-10 scoring. There were two patients where SLP and AHA decisions differed on the water

swallow test component (96.1% exact agreement with SLP; Kappa = 0.926), with the AHA incorrectly recording one patient as passing (false negative) and incorrectly classified a person as failing (false positive). However, in both cases the overall pass/fail screening decision was not affected as other components were failed resulting in an overall fail decision. Of the patients that failed dysphagia screening (n=39), the majority were admitted to hospital with respiratory conditions (48.7%, n = 19), followed by other medical conditions (23.1%, n = 9), multiple medical conditions (17.9%, n = 7) and surgical admissions (10.3%, n = 4).

4.7.4 Phase 2: feasibility.

Of the 48 participants in the feasibility phase, the AHA indicated that 41.7% (n=20) received an overall “pass” on dysphagia screening. These individuals therefore did not require further assessment by the SLP, thus reducing clinical workload by approximately 42%. Across the subcomponents, 56.3% (n = 27) passed both components of the Yale Water Swallow Protocol and 45.8% (n = 22) for the EAT-10. Of the 28 participants who failed AHA screening, clinical swallow examinations by the SLPs confirmed the presence of oropharyngeal dysphagia in 20 participants (true positive). The majority of these participants (n = 18) were diagnosed with mild dysphagia, and one each with mild-moderate and moderate dysphagia. In three cases the SLP suspected an oesophageal cause and referred to the medical team for further guidance and diagnosis. The remaining 5 (10.4%) participants who failed AHA completed dysphagia screen were not determined as presenting with clinically observable dysphagia on bedside examination (false positive for AHA screening). Chart audit approximately 3-months after the AHA conducted dysphagia screen noted that only two participants in the group that passed the AHA completed dysphagia screen were re-referred to the SLP and re-referral was related to a separate

clinical incidence/change in condition in both instances (therefore nil false negatives were identified). The first patient received a diagnosis of transient ischemic attack following delegated dysphagia screening and was therefore reviewed by the SLP to conduct a communication screener (nil dysphagia identified) and the second patient was re-referred to the SLP following screening due to a medical deterioration on a background of progressing cardiac failure and hospital acquired pneumonia (mild dysphagia identified).

4.8 Discussion

The findings of the current study identified that trained AHAs could complete dysphagia screening and record an overall pass / fail rating of dysphagia risk with a high degree (100%) of accuracy and agreement when compared to SLP ratings on a combined screening tool. This finding supports the accuracy and safety of careful delegation of dysphagia related tasks, following standardised and targeted training. The feasibility phase of the study revealed that using AHAs to complete dysphagia screening in ‘low risk’ dysphagia referrals could reduce by approximately 42%, the workload demand for SLPs. Thus, the proposed model could be implemented as a workload management strategy in the acute clinical setting. Furthermore, the safety of the model was demonstrated as in a subsequent chart audit there was no strong evidence to support existence of false negative results from the AHA screening.

Overall, the AHA and SLP rater decisions regarding overall pass/fail rating on the dysphagia screening tools reached perfect agreement. Munn and colleagues (2013) have outlined that accurate completion of delegated tasks by an AHA requires specific clinical training, assessment of the AHA’s ability to perform the task safely, and ongoing supervision and

monitoring of task completion. As all of these components were incorporated into the current delegation model the high-level agreement is testament to this skill development approach to delegation. The importance of targeted training prior to dysphagia task delegation, is supported by a study by Sharma and colleagues (2012) in which AHAs reported increased dysphagia knowledge and confidence following training to support dysphagia assessments occurring via telehealth. High level of agreement between AHA and SLP raters following task specific training for dysphagia related tasks was also identified in a study investigating the validity of using AHAs to complete mealtime observations in which agreement reached 94% (Schwarz et al., 2018).

Dysphagia screening is an integral part of many acute hospital settings to ensure early identification of those at risk of dysphagia (Cichero et al., 2009; Daniels et al., 2012; Hines et al., 2016; Perry & Love, 2001; Titsworth et al., 2013; Trapl et al., 2007). The current study sought to demonstrate a feasible alternative to an SLP completing a clinical swallow examination for patients considered to be at low risk of dysphagia, which at times was deemed unnecessary and adding to already stretched workload demands. The findings of this study may be used to support a feasible alternative to nurse-led dysphagia screening, which currently adds to the burgeoning workload of nursing staff (Demerouti et al., 2001). Building on the knowledge that trained AHAs can accurately determine overall dysphagia risk, the second phase demonstrated that delegation of dysphagia screening to AHAs can safely reduce the number of ‘low risk’ referrals requiring clinical dysphagia assessment by an SLP. This is similar to models in which a dietitian screened for dysphagia risk, which demonstrated a similar reduction in inappropriate referrals (Huhmann et al., 2004). Data is however not yet available to demonstrate that this model impacts on time

patients spend NPO or waiting for assessment, similar to the impact of nurse-led models (Hines et al., 2016).

The outcomes of the feasibility phase of this study support the potential for reducing SLP workload demand through careful delegation. This ability to delegate low priority clinical duties to a well-trained AHA highlights opportunities for the SLP to focus time and resources on more complex patients, those requiring more intensive rehabilitation or to contribute to non-clinical tasks and duties (Nancarrow et al., 2014; O'Brien et al., 2013; Somerville et al., 2018). Similarly, as over-referral (false positive) ratings were noted to be low in the current study (10%), patients identified by the AHA to require further assessment by the SLP are likely to have dysphagia which requires assessment and management, thereby contributing to accurate triaging of referrals and appropriate resource allocation.

As safety and accuracy of AHA performed screening has been demonstrated by this study, future application of the model may lend itself to consideration of pro-active AHA completed dysphagia screening for particular 'at risk' populations. This 'blanket approach' could lend itself particularly to patients with respiratory conditions (for instance Chronic Obstructive Pulmonary Disease (COPD)) and the frail elderly population which were most commonly identified in the current study as reasons for screening delegation. A recent narrative review of dysphagia in patients with COPD for instance identified prevalence of aspiration in this population to be as high as 25% as a result of altered upper airway protection (Clayton, Carnaby, Peters, & Ing, 2014; Cvejic & Bardin, 2018; Cvejic et al., 2011). Similarly, compared to older adults without dysphagia those who present with clinical indicators of dysphagia have a

significantly higher risk of 1-year mortality rates (Rofes et al., 2010) thus highlighting the importance of early identification and management. Increased awareness of the need for dysphagia assessment and management in these populations will lead to increasing referrals to SLP services for assessment and intervention (Rumbach et al., 2017). Clinically the capacity of the SLP workforce to manage increasing demand is currently challenged, thus AHA completed dysphagia screening could be utilised in order to identify patients with early risk factors for dysphagia and would benefit from SLP intervention. This model for managing the SLP workload thus also ensures they see patients most at risk of dysphagia within appropriate timeframes.

The results of this study provide initial evidence for the accuracy of AHA completed dysphagia screening when compared to the same task completed by a SLP and lends support for a potential positive influence on workforce demand. However, limitations of the study include its relatively small sample size of AHAs and SLPs and focus on the acute clinical setting which may reduce the generalisability. In addition, the oromotor and cognitive screening components of the Yale Water Swallow Protocol (Leder & Suiter, 2014; Suiter et al., 2014) were excluded from the current screening process, which may influence the overall validity and reliability of the selected tool given altered application. Similarly, failure to compare screening accuracy with nurse led models and lack of blinding between SLP and AHA are also considered a limitation. While the current study did not aim to validate the screening tools selected, comparison to the methodological quality rating procedures proposed by Martino, Flowers, Shaw and Diamant, (2013) does raise the limitation of non-consecutive recruitment in this study. However, due to clinical constraints participants were unable to be recruited in a truly consecutive or random nature, as recruitment depended on staff availability at each site and the identification of

appropriate ‘low risk’ patients referred to the SLP or identified from prospective screening of the ward list. To increase generalisability and further validate the clinical safety of the current model future studies investigating the longitudinal outcomes (including comparison of screening results to instrumental swallow assessment outcomes) of a large number of patients following AHA completed dysphagia screening is required. In addition, a larger sample size of AHAs and SLPs participating in the validation phase would demonstrate greater applicability of the training process to a larger group of participants. Furthermore, a formal cost analysis should be undertaken including accounting for time and cost of training provision and the impact of potential over-referrals to examine the cost effectiveness of this model of care.

In conclusion, AHA completed dysphagia screening is considered accurate when compared to a SLP determined dysphagia risk. The clinical application of how best to utilise this model of care requires further investigation to ensure the task delegation contributes to positive workload management and improves early identification of dysphagia risk in at risk clinical populations. However early evidence suggests that as 42% of ‘low risk’ referrals do not require SLP intervention, there is the potential for greater workforce efficiency and workload reduction through appropriate delegation and screening performed by a trained AHA.

5 Chapter 5. Dysphagia screening using an Allied Health Assistant delegation model: Service considerations for implementation.

Schwarz, M., Ward, E.C., Cornwell, P., Coccetti, A. (submitted). Dysphagia screening using an Allied Health Assistant delegation model: Service considerations for implementation. *International Journal of Language and Communication Disorders.*

5.1 Contributions

Contributor	Statement of contribution
Author Maria Schwarz (Candidate)	Study Design – 60% Recruitment & Data collection – 30% Statistical analysis – 60% Wrote the paper– 85%
Author Elizabeth Ward	Study Design – 40% Recruitment & Data collection – 60% Statistical analysis – 20% Edited the paper – 20%
Author Petrea Cornwell	Study Design- 10% Statistical analysis – 20% Edited the paper – 10%
Author Anne Coccetti	Recruitment & Data collection – 10% Edited the paper – 5%

5.2 Integration of Chapter 5 with Thesis

Thus far this thesis provides growing evidence to support the validity and feasibility of delegated AHA completed dysphagia tasks with a high degree of task accuracy identified post training for mealtime observation and dysphagia screening. The introduction of AHA delegation models however, remains a complex clinical area with several perceived barriers as outlined in Chapter 1. The implementation of a new innovative model of care was therefore expected to meet a number of barriers and challenges which must be considered within the context of implementation in order to facilitate success. Similarly, the knowledge and perceptions of key stakeholders must be clearly understood to facilitate successful introduction. As delegation of dysphagia related tasks to a trained AHA remains novel at many sites, further evidence regarding the context and facilitators of successful model implementation is required. To explore these parameters three sites who implemented delegated AHA dysphagia screening participated in stakeholder interviews, which were evaluated using the Consolidated Framework for Implementation Research (CFIR). Considering the known barriers relating to introducing AHA models into clinical practice, the current chapter provides valuable guidance for sites wishing to introduce similar delegation models in dysphagia screening or other areas of dysphagia practice.

The following manuscript, entitled “Implementing dysphagia screening using an Allied Health Assistant delegation model: Service considerations” describes a prospective cohort study using a qualitative interview method, which aimed to explore the perceptions of stakeholders regarding introduction of an AHA dysphagia screening model. This manuscript was submitted for publication in the International Journal of Language and Communication Disorders in 2019 and is inserted as Chapter 4 of this thesis as submitted. For consistency throughout the thesis,

formatting changes that have been made to align with the American Psychology Association Style guidelines (6th edition) and citations within the body of the text that have been referenced in previous chapters have been listed as subsequent citations within the text. Similarly, the abbreviations defined in previous chapters are listed on page xxvi and are not re-defined in this chapter. All references are listed at the end of this thesis.

5.3 Title: Dysphagia screening using an Allied Health Assistant delegation model: Service considerations for implementation.

Maria Schwarz, B.SpPath (Hons) [1, 2,] Elizabeth C. Ward, BSpThy (Hons), Grad Cert Ed., PhD [2, 3,] Petrea Cornwell, B.SpPath, PhD [4], Anne Coccetti, B.SpPath (Hons), Grad DipBusAdmin [1]

1. Speech Pathology and Audiology Department, Logan Hospital, Meadowbrook, Queensland, Australia
2. The University of Queensland, School of Health & Rehabilitation Sciences, Brisbane, Queensland, Australia
3. Centre for Functioning and Health Research, Queensland Health, Brisbane, Queensland, Australia
4. Menzies Health Institute, School of Allied Health Sciences, Griffith University, Queensland, Australia

5.4 Abstract

Background: Dysphagia screening is typically performed by nursing staff; however, new evidence also supports delegated screening models using trained allied health assistants (AHAs).

Aim: to examine the experiences of three services introducing an Allied Health Assistant (AHA) delegated dysphagia screening model to inform future clinical implementation.

Methods & Procedures: Three facilities within a public network, varying in size, services and location, indicated intent to implement AHA delegated dysphagia screening for low risk patients. AHAs (n=4) and speech-language pathologists (SLPs; n=4) directly involved in the service implementation at each site completed semi-structured interviews exploring the implementation experience. The Consolidated Framework for Implementation Research (CFIR) was used as the analysis framework.

Outcomes & Results: Facilitators to implementation fell within the CFIR Innovation Characteristic domain. The ‘relative advantage’ of the model and the ‘design, quality and packaging’ of the training and implementation resources were key facilitators. Key barriers also related to the Innovation Characteristic domain, particularly regarding the tool’s ‘adaptability’ in terms of screening tools selected and the implementation environment. In addition, barriers were also identified within the Inner Setting domain, specifically the ‘structural characteristics’, the ‘compatibility’ of the model and the ‘relative priority’ of the model’s implementation within other organisational priorities. Commitment to continuation of model was identified at two sites.

Conclusion & Implications: To ensure successful implementation of an AHA dysphagia screening model the model must demonstrate relative advantage, be well packaged and organised, be adaptable to the needs of the organisation and be compatible with local workflow and priorities.

Key words: implementation, delegation, Allied Health Assistant, dysphagia

What this paper adds

What is already known about this subject

The early identification of presence or absence of dysphagia risk, using a validated dysphagia screening tool, is vital in clinical practice to prevent complications of dysphagia such as aspiration pneumonia and therefore reduce healthcare related costs and complications. Given the high demand on speech pathology services, the task of dysphagia screening has traditionally been completed by nursing staff using a substitution model. In the context of growing demand and finite resources in many areas of dysphagia management, health service policy is increasingly supporting the use of task delegation to trained Allied Health Assistants (AHAs).

What this study adds

The introduction of AHA delegation models, remains a complex clinical area with several perceived barriers. As delegation of dysphagia related tasks to a trained AHA remains novel at many sites, this study provides evidence regarding the context and facilitators of successful model implementation including providing valuable guidance for sites wishing to introduce similar delegation models.

Clinical implications of this study

Considering the known barriers relating to introducing AHA models into clinical practice, the current study provides valuable guidance for sites wishing to introduce similar delegation models in dysphagia screening or other areas of dysphagia practice by presenting both clinical facilitators and potential barriers for implementation.

5.5 Introduction

Dysphagia is a common complication in the acute medical setting as it is a consequence/co-morbidity of a wide range of medical conditions and interventions (Coates & Bakheit, 1997; Martin-Harris et al., 2005; Meng et al., 2000; Paranji et al., 2017; Roden & Altman, 2013; Rofes et al., 2010; Sarabia-Cobo et al., 2016; Steidl et al., 2015). A study of hospital discharge data, reviewing over 77 million acute hospital admissions, identified that while admissions related to dysphagia only accounted for 0.35%, dysphagia was associated with a 40% increase in length of stay and a significant increase in mortality risk (Altman et al., 2010). Similarly, a large study of 12,276 patients with stroke identified that patients with dysphagia had longer hospital stays, increased risk of pneumonia, increased fatality rates and increased disability at discharge (Al-Khaled et al., 2016). Thus, while dysphagia prevalence for overall hospital admissions may be low, its associated complications may result in adverse medical and service outcomes if not identified and managed early (Altman et al., 2010; Bonilha et al., 2014; Foley et al., 2009; Langdon et al., 2008; Perry and Love, 2001; Ueda et al., 2004). This highlights the importance of early identification and efficient management of dysphagia as vital in preventing negative health outcomes.

While the assessment and management of dysphagia is a multi-disciplinary practice in which Speech Language Pathologists (SLPs) often take a lead role (Rumbach et al., 2017), the initial identification of presence/absence of dysphagia risk, referred to as dysphagia screening is performed by nursing staff in many clinical contexts (Cichero et al., 2009; Hines et al., 2016; Trapl et al., 2007; Perry and Love, 2001). Numerous studies have been conducted confirming that this role can be safely and accurately completed by nursing staff (Cichero et al., 2009; Hines

et al., 2016; Titsworth et al., 2013; Trapl et al., 2007), leading to direct patient and service benefits (Hines et al., 2016). However, in many services there are increasing demands on nursing staff that potentially limit their capacity to take on additional duties such as dysphagia screening. A survey study of 171 nurses identified that 67% of responders experienced moderate to high levels of stress due to high demands in short time periods (McGrath et al., 1989). One third of respondents reported a reduction in workload would alleviate workplace stress (McGrath et al., 1989). Thus, although the benefits of nurse led dysphagia screening are well documented, alternative models of service delivery (including alternative models of dysphagia screening) require investigation (Brooks et al., 2008; McGrath et al., 1989; Young et al., 2015).

Delegation models are an alternate model of care through which dysphagia screening can be conducted. Within a delegation model, the allied health professional – in this case the SLP - authorises another trained person, usually an Allied Health Assistant (AHA), to complete a task on their behalf (Allied Health Professions Office of Queensland, 2016; Young et al., 2015). The delegating professional maintains responsibility and accountability for the task's completion (Allied Health Professions Office of Queensland, 2016; Young et al., 2015). Within the profession of nursing, delegation models are well established, with the utilisation of roles such as "assistants in nursing" widely accepted in the clinical setting (National Council of State Boards of Nursing, 2016; Wagner, 2018). Currently within the Australian healthcare context various taskforce initiatives and local policy directives are actively supporting expanded scope models in allied health services (Allied Health Professions Office of Queensland, 2016; Brooks et al., 2008; Duckett, 2005a, 2005b; Munn et al., 2013; Nancarrow et al., 2013; Schwarz et al., 2019; Somerville et al., 2015; Young et al., 2015). These models include AHA delegation, in order to

find solutions to meet the growing service demands (Allied Health Professions Office of Queensland, 2016; Young et al., 2015). However, delegation models in the Allied Health professions have received less research investigation and site-specific adoption (Brooks et al., 2008; Duckett, 2005a, 2005b; Munn et al., 2013; Nancarrow et al., 2013; Schwarz et al., 2019; Somerville et al., 2015; Young et al., 2015) than similar nursing models.

Specific to the clinical area of dysphagia services, delegating dysphagia related tasks to trained AHAs has been found to have positive clinician acceptance (Schwarz et al., 2019). Although the evidence for these models is only just emerging, the use of AHA delegation models to assist the online clinician during telehealth dysphagia assessments has been shown to be integral to the success and safety of this type of service (Sharma et al., 2012; Ward et al., 2012). Similarly, a study investigating the delegation of mealtime observation to trained AHA staff to identify presence of dysphagia has revealed positive perceptions and accurate risk ratings by the AHA when compared to the SLP observations (Schwarz et al., 2018). Systematic research has confirmed that dysphagia screening in particular, has promising validity and feasibility when delegated to trained AHAs (Schwarz et al., n.d). Thus, policy, clinical perceptions and emerging evidence all support the role of AHA delegation models in SLP clinical practice.

Although the use of delegation models to conduct dysphagia screening has emerging, clinical support and conducting dysphagia screening via an AHA delegation model is fundamentally different to independent nurse led dysphagia screening due to the need for SLPs involvement in task delegation and outcome decisions. Hence, this type of model may face several implementation barriers. For instance, prior research has identified multiple barriers to

increasing delegation of services to AHAs, including the time spent by the SLP (McCartney et al., 2005; Wenke et al., 2014), the lack of clarity regarding roles and the potential for negative perceptions from allied health professionals who may perceive role or professional threat (Munn et al., 2013; Nancarrow et al., 2013). Allied health professionals may also perceive a limited understanding of full scope of practice for AHAs, thus limiting their confidence in delegating tasks (Stute et al., 2014). Additional challenges in implementing AHA service models include the high demand on assistants to learn new skills, the time invested in providing training and lack of consistency and paucity of opportunities with regards to career progression and remuneration (Ellis & Connell, 2001; Wood et al., 2011).

Current evidence suggests that AHAs are under-utilised in the clinical setting, with a greater number of non-clinical tasks being performed (Stute et al., 2014). Although there are multiple positive drivers for introducing AHA screening models (Schwarz et al., 2019; Sharma et al., 2012) multiple other factors may influence the introduction of AHA delegation models (Stute et al., 2014) for services such as dysphagia screening. However, to date there is limited understanding of the specific factors that may influence the implementation of these services or pose contextually specific barriers. Hence, the aim of this research was to use an implementation science framework to examine the experiences of implementing an AHA dysphagia screening model across three differing clinical settings within a public health service. Stakeholder perceptions of facilitators and barriers to successful implementation of an AHA dysphagia screening delegation model can provide valuable insights for other sites considering similar delegation models.

5.6 Methods

5.6.1 Facility selection.

Site recruitment occurred as part of, or subsequent to a larger research project to investigate the safety and validity of using AHA delegation in dysphagia screening for low risk patients (Schwarz et al., n.d). Site 1 and Site 2 participated in data collection for the initial validation study (Schwarz et al., n.d), while Site 3 introduced the AHA delegation model for dysphagia screening within their service with no prior participation in the validation project. All participating services expressed an interest to the research team to implement AHA dysphagia screening at their site. All participating sites were SLP departments that (a) recognized the potential benefits for their services from introducing this model, (b) had an AHA workforce they could use to implement this model, and (c) were open to participate in a research evaluation of their implementation experience. The three participating sites differed in size, location and number of AHA staff trained (Table 5.9). The study obtained ethical approval from the appropriate human research ethics committee (HREC/15/QPAH/486) and all participants provided informed written consent.

Table 5.9. Summary of site context and implementation

	Site 1	Site 2	Site 3
Site Size (approximate bed number)	435	140	217
Site Location	Metropolitan	Regional	Metropolitan
Number of AHAs trained	5	1	1
Nature of screening model	Delegated from SLPs referral list or from proactive screening.	Delegation primarily from proactive screening (some from SLP referrals).	Delegation from SLP referral list.

5.6.2 AHA delegated screening model.

A detailed outline of the AHA delegated dysphagia screening model, including its validity and feasibility, is reported in detail elsewhere (Schwarz et al., n.d). In brief, the model involves training an AHA to conduct the screening process including a theoretical training package, observation and competency assessment. The screening model identified an overall pass/fail rating, related to dysphagia risk, which was determined based on the outcome of independently completed tasks including: (1) identification of the exclusion criteria and completion of the water swallow components of the Yale Water Swallow Protocol (Suiter et al., 2014), and (2)

completion of the EAT-10 (Belafsky et al., 2008). In the published validation study, the AHA model was tested on a cohort of patients delegated to the AHAs from low risk referrals received within the participating SLP departments or screened from ward lists (Schwarz et al., n.d). However, following completion the validation study, all sites participating in the implementation phase of this research reported here, were given independence regarding the service model in which they wanted to use the AHA screening model. Contextual information regarding the model that was implemented at each site is summarised in Table 5.9.

5.6.3 Study participants.

All delegating SLPs and delegated AHA staff involved in the models at each site (total of 12 possible staff) were invited to participate in the implementation evaluation study via an email invitation from the study team. Two-thirds 67% (n =8) consented, and a minimum of 1 SLP and 1 AHA participated from each site (Site 1: 2 AHAs, 2 SLPs; Site 2: 1 AHAs, 1 SLPs; Site 3: 1 AHAs, 1 SLPs).

5.6.4 Data collection procedures.

The evaluation of staff experiences/perceptions of implementing AHA delegated dysphagia screening was conducted at a minimum of 1-year post training to implement the service model. To collect information of the experiences at each site, all consenting SLPs and AHAs were interviewed. The Consolidated Framework for Implementation Research (CFIR) framework (Damschroder et al., 2009) was used to guide development of the interview guide and involved questions that explored the reasons for implementing the service at their site, the implementation experience and ongoing sustainability of the model in each site. Separate

interviews were conducted with the AHA staff and the SLP staff at each site to ensure staff felt free to comment on any issues with the delegation model. Where multiple AHA or SLP staff were participating from a specific site, they participated in a group interview format, resulting in a total of six interviews being completed. To ensure all participants felt free to discuss the model, a study investigator not directly involved in staff training or site implementation support led all the interviews (EW). All interviews were conducted via telephone and recorded. The recorded interviews were transcribed verbatim by a research assistant external to the study and checked for accuracy by the lead study author (MS).

5.6.5 Analysis and interpretation.

Information collected through the interview process was reviewed by the study authors and mapped to the domains and constructs of the Consolidated Framework for Implementation Research (CFIR) framework (Damschroder et al., 2009). The CFIR framework consists of a large number of constructs which have been identified as influencing successful implementation, that can be used in a systematic way to help to prepare or evaluate an implementation (Damschroder et al., 2009). These constructs are organised into five domains, including: (1) Innovation Characteristics – i.e. in this case the characteristics and attributes of the AHA dysphagia screening model, with example constructs in this domain being considerations such as complexity, cost, and relative advantage, (2) the Outer Setting which includes constructs such as patient needs, and policy and incentives driving the implementation, (3) the Inner Setting domain includes those constructs which examine issues such as culture and readiness for implementation, and (4) the Characteristics of Individuals domain explores constructs such individual state of change, and personal attributes. The 5th “Process” of the CFIR framework

was not applied in the current study, as this domain contains constructs typically considered prior to implementation. Detailed definitions of the five domains and descriptions of all constructs within each domain can be found in Damschroder and Lowry (2013) and further clarified on the CFIR website (https://cifrguide.org) and the CFIR Codebook (2014). The coding of all interviews was conducted by the lead author, with the coding of 4 of the 6 interviews cross-checked for accuracy by two additional authors (EW, PC). A consensus decision on any discrepancies was achieved through mutual discussion and review of the CFIR codebook (2014).

Each interview transcript for the AHAs and the SLPs from each site was independently coded against the CFIR constructs as per processes outlined in the CFIRR codebook (2014). All quotes relating to each specific construct were evaluated for strength and direction of influence on a scale of -2 to +2 (-2 indicating the construct was a strong negative influence on successful implementation, -1 indicating a negative influence, 0 a neutral influence, +1 a positive influence and +2 a strong positive influence). An overall rating for each construct was then determined by reviewing all statements attributed to a certain construct. Both the predominant the level of influence expressed within each statement, and the number of statements made about an issue was used to determine the final rating. In addition to analysing the transcripts for CFIR constructs, the final question in the interview asked all sites to reflect on the ongoing sustainability of the model within their service. This information was reviewed and reported separately for each site.

5.7 Results

At the time of the study interviews, services had been implementing AHA dysphagia screening between 1-3 years (Site 1=3.1 years, Site 2 = 2.9, Site 3 = 1.1 years). This duration included participation duration in the initial validation study for Sites 1 and 2.

5.7.1 CFIR analysis.

From the interview data, the influence ratings for each CFIR construct, as expressed by AHAs and SLPs at each facility was tabulated (Table 5.10) and key quotes pertaining to perceived sustainability are provided throughout the text. Each site reported both facilitators and challenges/barriers regarding their experiences implementing AHA delegated screening. Overall, AHAs and SLPs perceived the CFIR Constructs of Innovation Characteristics and Inner Setting most strongly influenced success of the implementation. While across all sites, the constructs within the Innovation Characteristics domain of ‘Adaptability’ was identified as the main barrier to implementation. Across the 40 CFIR constructs 23 were discussed as either having had a positive or negative influence on implementation by staff across the 3 sites (Table 5.10). The attributed strength and valence of each construct is outlined in Table 5.10 and supported by in-text quotations below.

Table 5.10. Summary of results (CFIR ratings)

	Site 1		Site 2		Site 3	
	SLP	**AHA**	**SLP**	**AHA**	**SLP**	**AHA**
I. Innovation characteristic						
1A. Innovation source	1+	-	-	-	-	-
1B. Evidence strength and quality	-	-	1+	-	-	-
1C. Relative advantage	2+	2+	2+	2+	0	0
1D. Adaptability	2-	-	2-	1-	1-	-
1G. Design quality and packaging	2+/1-	2+	2+	2+	2+	1+
1H. Cost	1+	-	-	-	-	-
II. Outer Setting						
2A. Needs and resources of those served by the organisation	2+	1+	1+	-	-	-
2D. External policy and incentives	1+	-	1+	-	-	-
III. Inner Setting						
3A. Structural characteristics	1+	-	1-	2+	1-	2-
3B. Networks and communication	2+	1+	-	1+	-	1+
3C. Culture	1+	1+	-	-	-	-
3D. Implementation climate	1+	-	-	-	1-	1-
3D2. Compatibility	1+	-	2+	1+	2-	1-
3D3. Relative priority	2+	-	1+	-	2-	1-
3D5. Goals and feedback	-	1+	-	-	-	-
3D6. Learning climate	2+	1+	1+	1+	-	-
3E. Readiness for implementation	1+	-	1+	-	-	-
3E1. Leadership engagement	-	-	-	-	1+	-
3E2. Available resources	1-	-	2+	1-	1-	1-
3E3. Access to knowledge and information	1+	1+	-	-	1+	1+
IV. Characteristics of Individual						
4A. Knowledge and beliefs about the innovation	-	1+	-	1+	2-	1+
4B. Self-efficacy	-	1+	1+	2+	-	1+
4C. Individual state of change	-	-	-	-	2-	-
4E. Other personal attributes	1-	-	-	-	-	-

5.7.1.1 CFIR domain: innovation characteristic.

Both AHAs and SLPs at Site 1 and Site 2 reported strong positive responses to the construct of the 'Relative Advantage' of the model, citing improved patient care, support for SLP caseload triaging and improved time allocation to more complex patients as key advantages to model implementation. Both SLPs and AHAs saw clear advantages: *"it [AHA dysphagia screening] also allows us to better allocate our services to some of those more complex dysphagia patients (site 1_SLP)"* and *"help triage the caseload…make sure, essentially there's not time being wasted for the Speech Pathologists…where I could go in and check on these patients (site 2_AHA)"*. In contrast, Site 3 reported slightly positive and slightly negative perceptions, resulting in this being coded as a neutral response to 'Relative Advantage'. Although they saw the model had some advantages for the AHA regarding role satisfaction, *"for her [AHA] job satisfaction it would be good to give her a bit more clinical stuff (site 3_SLP)"*, they did not see clear efficiencies for their service and felt that for the majority of their patients, the SLP would still have to see the patient when concerns were identified: *"I mean it would just be referring them onto the Speech Pathologist anyway wouldn't it?" (site 3_AHA)."*

The construct of 'Adaptability' received a negative rating from SLPs at all sites, and the AHAs at Site 2 (Table 5.10). This pertained primarily to concerns regarding the rigidity of the screening tools: *"I don't think we'll use it in the same way, in the…set format...or set structure that [site 1] has done, but I definitely think the education and upskilling that [AHA] got by doing it and being involved in it will be very beneficial for us (site 3_SLP)"* and several suggestions for different tools to be used, particularly relating to the EAT-10: *"a lot of them [patients] fail on the EAT-10…if there is scope in the future for a different tool to be used...it just seems far too*

sensitive (site 1_SLP)". Site 3 also raised the issue that perhaps the model would have been better implemented in other parts of their service than where they trialled it*: "I'm actually a rehab clinician, and obviously this is more appropriate on our acute wards (site 3_SLP)."*

All sites and all participants reported a positive response to the construct of 'Design, Quality and Packaging' of components within the model, how it was presented and disseminated, and the quality of materials. In particular, the training package was reported to be a positive facilitator to implementation: *"I think the training on the specific tool is a facilitator to the model (site 2_SLP),"* in addition the presentation of information and packaging were reported to positively influence ease of implementation *"having all the information provided to us before we'd gone up to see the patient (site 1_AHA)."* The consistency and objectivity offered by the training resources was highlighted as a facilitator for implementation *"it's consistent across all the AHAs…its very standardised (site 1_SLP)."*

5.7.1.2 CFIR domain: outer setting.

SLP and AHA stakeholders at Site 1 and the SLP responder at Site 2 reflected positively on the ability of the model to meet the 'Needs and Resources of those Served by the Organisation' (Table 5.10) with supporting statements such as: *"ageing population is increasing…the demands on speech pathologist's services [are increasing] (Site 1_SLP)."* Similarly, site two reported the perceived need for the implementation of AHA dysphagia screening given the needs of the organisation, ('External Policy Drivers and Incentives'), citing an increase in demand on speech pathology services as a key driver: *"meeting the demand*

without having an increase in staff (site 2_SLP)"; maximising the utilisation of AHAs is a principle within our health district (site 2_SLP)."

5.7.1.3 CFIR domain: inner setting.

The 'Structural Characteristics' construct, considering the size and make-up of the health service and patient populations, was reported to be both a positive and negative influence on implementation (Table 5.10). The SLP at Site 1 reported this was a positive influence: *"we're lucky here we've got a great bunch of AHAs (site 1_SLP)",* while SLPs at other sites reported this as a negative influencer: *"it's been so busy…all the patients seem to be so complex at the moment, so they weren't those ones that we felt that we could send to [AHA] (site 3_SLP)."* Conversely, the AHA at Site 2 reported a strong positive influence: *"smaller department…regional hospital…it works well because…the workload is quite heavy on the Speech Pathologists , and we do cover two hospitals…so it's good for me to have those skills to be able to you know help triage the caseload a bit more (site 2_AHA)."* While Site 3 reported structural barriers to implementation from both AHA and SLP perspectives, given the location of implementation *"I couldn't drive it from which patients are available, because I'm not actually in that caseload (site 3_SLP)."*

The construct 'Networks and Communication' within the organisation was reported by most stakeholders as a key facilitator to successful implementation of the model (Table 5.10). Particularly, the communication and interactions between the AHA and the delegating speech pathologist were reported to be of positive value: *"I feel quite supported by them [SLP] (Site 2_AHA)"* and *"they're [SLP] really contactable…sometimes when you're doing it whether*

you've got the right information and things like that, so they [SLP] were really good to talk to (Site 1_AHA)." In contrast the construct of 'Compatibility' demonstrated site specific variation, with Site 3 being the only site reporting an overall negative perception of AHA dysphagia screening compatibility with existing workflows, structures and systems *"I don't know if it was looked at how beneficial it would be for our hospital (site 3_SLP); "they [acute SLP] had to see the patient anyway, so it wasn't beneficial for them in that way (site 3_SLP)."*

A positive 'Learning Climate' was reported to be a facilitator to implementing AHA dysphagia screening at Sites 1 and 2, who reported that AHAs in particular were keen to expand their role and were valued members of the team with strong foundational knowledge and understanding of dysphagia principles: *"they're [AHAs] keen to be able to expand their role (site 1_SLP)."* However, several respondent groups indicated that access to 'Available Resources' negatively influenced implementation, with only the SLP at Site 2 reporting a positive impact of available resources (Table 5.10). Under-staffing reduced capacity to implement AHA dysphagia screening at times *"on the odd occasion…we were desperately short staffed (site 2_AHA)"*, similarly access to AHA resources assigned to the speech pathology service was identified as a barrier *"so more having a dedicated staff member so that then you had more freedom to refer anytime you wanted (site 1_SLP)"* and *"AHA only here part-time, we utilise her more within the communication setting (site 3_SLP)."*

5.7.1.4 CFIR domain: characteristic of individual.

'Knowledge and Beliefs About Innovation' was reported by Sites 1 and 2 as a positive facilitator. In particular, highlighting the importance of maintaining a delegation-based model as

a facilitator: *"they're [patients] always identified by the speech pathologist…its always delegated (site 2_AHA)"*, as was a thorough understanding of the tool: *"we did feel confident that the AHA was going to get a reliable result (site 2_SLP)."* Site 3 reported negative perceptions regarding the implementation of the model suggesting that knowledge and beliefs about the tool reduced the confidence of clinicians delegating to the AHA: *"clinicians…feel… that ownership of the patients, that they want to do it all, so they [SLP] didn't feel confident to pass on those referrals to [AHA] (site 3_SLP)."* Contrastingly, the AHAs at all sites reported that 'Self-efficacy' resulted in positive perceptions of the model's implementation regarding confidence and skill in performing the task *"I did feel confident that I could go through…gather that information (site 3_AHA)"* and *"I feel comfortable now going up and doing the whole process (site 1_AHA)."*

5.7.2 Overall model sustainability.

All stakeholders were asked to consider the ongoing sustainability of AHA delegated dysphagia screening at their sites. Two sites (Site 1 and Site 2) reported that while changes would be required to best suit current workflows and organisational requirements, they could see a potential for the continuation of the model within their service. A driver for continued implementation at Site 1 was reported to be an organisational focus on increasing occasions of service with new models of care *"push of increased occasions of service, so trying to use AHAs with this model to try and increase our occasions of service, and maybe it's you know screening wards…so screening low risk patients on certain wards (site 1_SLP)."* Similarly, Site 1 suggested that adapting the tool to different caseloads could be utilised as an opportunity for model growth *"real opportunity to have AHAs working in the Emergency department do a bit*

more (site 1_SLP)" and *"our respiratory wards come to mind…that's under-serviced…I think we could possibly use AHAs (site 1_SLP)."* Sites 1 and 2 also reported that they had access to a highly skilled and stable AHA workforce which supported delegation and continuation of the model *"we do have two dedicated AHA positions for speech pathology team…in a small service…is an indication of how much we value that role (site 2_SLP)."*

Site 3 however, did not express a commitment to model continuation in its current form. In particular, staff interviews revealed issues with the 'Adaptability', 'Structural Characteristics', 'Knowledge and Beliefs' and 'Individual State of Change' as key barriers to continuation *"but actually how it will be able to be done on the ground wasn't investigated (site 3_SLP)."* Staff also raised different site priorities, with a preference for remaining with existing models of nurse-initiated dysphagia screening *"we've already got dysphagia screens that are being done by the nursing staff and I don't want to dilute that (site 3_SLP)."* Site 3 also reported significant difficulties with the model's compatibility with their service requirements, given the perceived complexity of their clinical caseload and the lack of "organisational fit" of the model within existing structures. These barriers related specifically to having the delegating SLP located at a different site (rehabilitation ward) within the service to where the AHA was completing screening (acute ward) making supporting the delegation model difficult. Further resource issues such as the challenges of implementing the model in a department with multiple part time staff, and limitations of using the model with AHAs who provide predominantly rehabilitation tasks were also raised. Overall, Site 3 felt they may find other ways to implement the model however they would use different screening tools that were more aligned with other screening tools in use at the site *"I think it would have to be, the only way we would use it in the future, was we would*

use it in a broad sense, with [AHA] going and screening the patients. Would we use it exactly the same way? I think we'd have to modify it for our caseload (SLP_site 3)".

5.8 Discussion

The results of the current study provide insights and guidance regarding the barriers and facilitators experienced by three different services implementing an AHA delegation model for dysphagia screening. The primary facilitators to the implementation of the AHA dysphagia screening model appear to be the Innovation Characteristic domain, with perceived 'Relative Advantage' of the model and the 'Design, Quality and Packaging' of the training and implementation resources being reported as facilitators to implementation. Key barriers to implementation were reported to include the Innovation Characteristic domain. Specifically, the tool's 'Adaptability' in terms of screening tools selected and implementation environment. In addition, similar to other studies utilising the CFIR framework (Damschroder & Lowry, 2013), barriers to implementation were identified in the Inner Setting domain with regards to the 'structural characteristics' of the organisation, the 'Compatibility' of the model within existing workflows and the 'Relative Priority' of the model's implementation within other organisational focuses such as nurse led dysphagia screening were identified at one site.

The 'Design, Quality and Packaging' of the resources utilised in the current implementation model were regarded as key facilitators to successful implementation across all sites; being complete, easy to use and evidence based. The ease of access and appropriateness of training cannot be overlooked, as it is vital that the assistant receives training on the clinical tasks they are to perform, are assessed on their ability to safely complete these tasks and receive

ongoing supervision (Munn et al., 2013). The development of resources such as those described by the current study only serve to make this process more readily accessible and standardised in nature. Similarly, the individual skills, knowledge and experience of assistants are likely to influence the level of training, support and supervision required for assistants in new roles (Ostegren et al., 2015). AHAs within the current study expressed strong confidence and self-efficacy in performing the delegated task. These personal characteristics including demonstrated maturity, enthusiasm and job satisfaction are supported by the literature to be facilitators to successful implementation of a new podiatry assistant role (Moran et al., 2012). Perceived confidence is likely to be facilitated by and contribute to the high quality of 'Networks and Communication' between the delegating SLP and AHA which were described within the current study. The importance of high-quality communication and positive work culture between the delegating health professional and the AHA as a facilitator to successful delegation is strongly supported by the literature (Munn et al., 2013; Ostegren et al., 2012). For instance, a study of 144 SLP assistants highlighted that the provision of clear expectations and an approachable supervisor were key elements in developing skills and competency as an AHA (Ostergren et al., 2012).

Despite a positive perception of 'Relative Advantage' of the model at Site 1 and Site 2, all sites reported that the 'Adaptability' of the model was considered a barrier to ongoing utilisation. The sensitivity of the EAT-10 (Belfasky et al., 2008) in particular was reported to be a key contributor to perceived over identification of people with dysphagia. The EAT-10 (Belfasky et al., 2008), while able to predict risk of aspiration with a 71% sensitivity rating, only reached 53% for specificity in a large cohort of 360 patients assessed using the EAT-10 (Belfasky et al., 2008)

tool and VFSS procedure (Cheney et al., 2015). The perceived over identification of the EAT-10 (Belfasky et al., 2008), which may be the result of low specificity of the selected tool, was reported by SLP stakeholders as a key barrier to the adaptability of the model. The reported concerns regarding over identification of dysphagia, may however also be the result of how the screening model was implemented at each site. For instance, if a direct delegation method was utilised, the SLP had already received a referral for the individual, thus reducing likelihood that the individual would have nil signs of dysphagia on AHA screening. Thus, adaptability of the model may be improved by considering the type of delegation process utilised in the initial handover of the delegated task from SLP to the AHA.

When discussing the ongoing sustainability of the model at each site, it became obvious that this model can be used in different ways within a service. Hence sites need to determine how best to achieve the efficiencies they need, depending on their service characteristics. At some sites, the model worked well as a low risk referral management strategy, i.e. in the way it was used in the published validation study (Schwarz et al., n.d) where the SLP screens all referrals and delegates low risk referrals to the AHA. In this model, there is the expectation that a high number of the low risk referrals will not require any further SLP intervention. Using AHA delegated screening in this way, the SLP can achieve time efficiencies through the AHA screening and passing a proportion of their referred caseload. Sites 1 and 2 perceived advantages of using the model this way finding it assisted with caseload prioritisation, reduced demand on SLP services, and increased utilisation of AHA workforce. The ability to delegate a proportion of low-value tasks from the SLP caseload allows the clinician to use that time elsewhere for other services. Indeed, in a survey study of allied health professionals and AHAs, clinicians reported

that up to 24% of their time was spent undertaking tasks that could be safely delegated to a trained AHA (Somerville et al., 2018).

The alternative to the low risk referral model just discussed, is to use AHA delegated screening to support ‘blanket’ or ‘protocol driven’ screening process. In this model, the AHA screens all patients within a pre-determined ward or service setting, or those who meet a certain criterion. This way of using AHA screening is more in line with some nurse led models, were all individuals that meet a specific criterion (e.g. all patients at admission in the emergency department) (Hines et al., 2016), or patients on wards where dysphagia incidence is low and SLP services are not regularly provided (e.g. cardiac ward) are screened by the AHA. Given the low incidence of dysphagia in some populations (Altman et al., 2010), delegated blanket AHA screening would ensure mass screening is conducted, identifying the low proportion of individual presenting with dysphagia risk and immediately refer them for appropriate SLP services, thus preventing associated complications (Altman et al., 2010; Bonilha et al., 2014; Foley et al., 2009; Langdon et al., 2008; Perry & Love, 2001; Ueda et al., 2004). The adaptation to the model as a ‘blanket screening’ service model was identified by stakeholders at Site 1 and discussed as a future possible use by Site 3, with patients admitted with a diagnosis of respiratory deficits identified by Site 1 as a key clinical population that would benefit from such an approach. Using the model in this way allows SLP services to be more responsive to the needs of patients on certain wards, or with certain types of conditions in which the incidence of dysphagia is low, potentially reducing risk of adverse outcomes (Hines et al., 2016; Martino et al., 2000), without the service burden of the SLP providing this screening service.

This study has several limitations. While the interview guide was developed informed by the CFIR, it was possible that issues pertaining to some constructs were not adequately explored through the questions. It is important however to note that almost all responses recorded were able to be mapped onto relevant CFIR constructs, suggesting questions were effective in eliciting construct specific responses. Secondly, our findings were based on the perceptions of key stakeholders who were instrumental in implementing the model, which introduces some risk of bias. Bias could be positive with participants feeling a sense of connection and/or achievement to the model implementation or negative given the sometimes time intensive process of implementation and/or perceived external pressure to implement. The positive perceptions of Site 1 and 2 may also have been biased by their participation in the earlier implementation study. Finally, the interviews were conducted at a specific time-point only, reducing the ability to collect information regarding the emergence of the constructs over the course of the implementation process (which at some sites was several years).

5.9 Conclusion

A significant increase in service demand is expected as the incidence of dysphagia increases within the context of an ageing population (Leder & Suiter, 2009). This increase in demand will only continue to support the investigation and adoption of models in which less complex tasks can be reallocated from SLP staff to staff such as AHAs, through models of role extension and task substitution (Brooks et al., 2008). In the current study stakeholder perceptions of implementing an AHA delegation model for dysphagia screening was largely positive at two sites, while the final site reported that the current model did not fit within the context of their workflows. The advantages of introducing this model and the high quality of resources provided

were cited as the primary facilitators to model implementation, while issues with how best to adapt the model to meet the needs of a site were identified as challenges. Sites wishing to introduce an AHA delegation model should consider the advantage of this model within their setting and within the context of current workflows to ensure that the model will achieve either efficiencies or improved services. Stakeholders must also have access to the necessary resources and high-quality education prior to introducing the model to assist its implementation.

6 Chapter 6. Summary, Clinical Implications, Limitations and Future Directions

6.1 Thesis Overview and Summary

In the healthcare context cost mitigation and provision of efficient care within finite resources is becoming of growing concern (Brooks et al., 2008). Factors including an ageing population, increased consumer expectations and increased prevalence of chronic diseases are contributing to a rise in healthcare cost, demand and an increase in related complications such as dysphagia. An increase in demand for dysphagia services, generates a significant demand on the healthcare workforce who screen, assess and manage these individuals. As the discipline most frequently responsible for dysphagia assessment and management, the speech pathology profession has experienced a significant increase in referral rate and complexity for patients with dysphagia.

Previously identified strategies to manage these increasing demands, such as shared care or substitution models with nursing staff are no longer sufficient to meet the needs and expectations of a growing number of patients with dysphagia. Furthermore, government policy and strategic direction is increasingly in support of extended scope of practice roles for AHPs, as well as a greater emphasis on efficiency strategies such as delegation to trained support staff (Allied Health Professions Office of Queensland, 2016; Australian Capital Territory Health, 2014; Brooks et al., 2008; Department of Health Western Australia, 2015; Health Victoria, 2012; New South Wales Health, 2013; Queensland Government, 2014). The healthcare context in Queensland in particular, highlights the growing focus on delegating low acuity tasks to trained

assistants, in order to reduce cost, improve efficiency and allow a greater emphasis on full and extended scope of practice for AHPs (Allied Health Professions Office of Queensland, 2016; Queensland Government, 2014).

Increased workforce flexibility is being proposed as a possible solution for the future. In the instance of the speech pathology workforce, workforce flexibility includes the delegation of certain tasks to a trained AHA. Despite mounting support for delegation models across health services and Allied Health disciplines, there remains a paucity of evidence to support the safe and reliable delegation of dysphagia related tasks to trained AHAs. Similarly, the feasibility and stakeholder perceptions regarding these models remains poorly investigated. Thus, as dysphagia management is arguably one of the most significant areas of growth for the speech pathology profession, this thesis aimed to provide an initial overview of the policy and practice contexts in which AHA delegation may occur, as well as providing an insight into the safety, validity and reliability of utilising AHA delegation for dysphagia specific tasks, namely mealtime observation and dysphagia screening. Similarly, this thesis explored the stakeholder perceptions and feasibility of introducing AHA delegation models into a specific clinical context (the acute hospital setting).

Chapter 1 of this thesis introduced the current complexities, challenges and demands of providing dysphagia related screening, assessment and management in a healthcare context with increasing constraints. In addition, this chapter highlighted a number of key barriers and facilitators to AHA delegation. Specifically, barriers such as the lack of AHA role clarity and perceived professional threat expressed by AHPs (Munn et al., 2013; Nancarrow et al., 2013)

were explored as hindering factors to widespread implementation of AHA delegation practice models. Reluctance to delegate tasks in the clinical context may also be the result of a lack of understanding regarding the delegation process, lack of trust in the assistant or their training, and concerns regarding professional boundaries (Nancarrow et al., 2013). In order to address these perceived barriers this thesis aimed to provide a clear definition of the AHA's role in dysphagia management including demonstrated safety of task completion following an appropriate training framework, in addition to contributing to a growing understanding of shifting professional boundaries.

Chapter 2 provided a synthesis of information from policy documents and current clinical practice, providing context and understanding of the current utilisation of AHA delegation in dysphagia management. Despite perceived barriers to implementation identified in the literature, and outlined in Chapter 1, the results of this study suggest that health service policy does not preclude AHA delegation in dysphagia management. In fact, several documents highlighted opportunities for AHAs to conduct tasks such as diet education and mealtime observation as part of their routine training and practice allocations (Australian Capital Territory Health, 2014; Health Victoria, 2012; New South Wales Health, 2013), indicating that dysphagia related tasks are in-fact within the scope of a trained and supervised AHA. The importance of high-quality training was identified as a key theme within this chapter, in order to facilitate safety and effectiveness of task delegation. Furthermore, stakeholder surveys suggested that despite limited research evidence, AHA delegation is increasingly being utilised in the clinical context particularly for the completion of mealtime observation.

As reported in the aforementioned mixed method survey study (Chapter 2), mealtime observation was reported to be the most frequently delegated task, currently allocated to an AHA following appropriate training. The results of Chapter 3 indicate that following a suitable training program the AHA is well placed to conduct this task. The findings of Chapter 3 of this thesis demonstrated that following high quality training the AHA provided both accurate information regarding dysphagia risk during mealtime observation and offered a cost-effective alternative for conducting this time intensive clinical task. Furthermore, qualitative information gleaned from this study suggests that both AHAs and SPs were satisfied with the training provided and expressed confidence in taking on this new clinical role. Results from Chapter 3 therefore lend support to the delegation of mealtime observation to a trained AHA, contributing to cost and time savings for the SP, while maintaining safety and monitoring of dysphagia risk for the patient.

Further evidence to support the accuracy and reliability of delegated task completion was identified in Chapter 4, which highlighted that following appropriate training an AHA was able to accurately identify dysphagia risk during dysphagia screening. The results approached perfect agreement on overall pass/fail criteria on the selected dysphagia screening tools. Chapter 4 also demonstrated the feasibility of introducing this model as a workload management strategy, with 40% of patients screened not requiring speech pathology follow-up. High quality training was again identified as a key contributor to achieving accuracy in task completion. Similar to the results of Chapter 3, delegation of dysphagia screening to trained AHAs could feasibly reduce demand and manage resource limitations by identifying patients at true risk of dysphagia prior to speech pathology assessment and intervention.

Despite high levels of accuracy with task completion, the results of stakeholder interviews described within a CFIR framework in Chapter 5 highlighted mixed responses to ease and commitment to continuation of the model's implementation. That study emphasised that to ensure successful implementation of an AHA dysphagia screening model it must demonstrate relative advantage, be well packaged and organised, be adaptable to the needs of the organisation, and be compatible with local workflow and priorities. Context of implementation was noted to be a key contributor to a site's commitment to ongoing implementation of the AHA dysphagia screening model. Stakeholder perceptions also pointed to the influence of variation between direct patient delegation (i.e. delegating a single patient referred to the SP to the AHA for screening) and protocol driven or blanket delegation (i.e. the AHA screening all patients meeting a certain criteria) on perceived implementation success and sustainability.

In summary this thesis provides support for the safety, feasibility and stakeholder acceptance of task delegation in the area of dysphagia to trained AHAs. The importance of targeted and high-quality training for AHAs prior to task delegation was a recurrent theme throughout the thesis and lends further support to current policy initiatives supporting greater uptake of standardised training such as the Certificate IV in Allied Health Assistance (Australian Government, 2013). The careful consideration of appropriate delegation i.e. delegation of appropriate patients, using open communication and the opportunity for feedback was also identified and supported throughout the current thesis. Further the current thesis promotes the consideration of AHA delegation as a cost-effective means to improve caseload management and gain greater efficiency in service delivery for a growing population of healthcare consumers.

6.2 Thesis Implications

The current thesis provides novel insight into the safety, feasibility and perceptions of delegation models introduced into the clinical area of dysphagia management within an acute hospital setting. Clinically, the current thesis suggests that AHA delegated dysphagia tasks can be completed in a safe manner following appropriate training. Findings from Chapter 3 and 4 in particular highlighted that following appropriate training, the AHA was noted to make decisions regarding dysphagia risk with a high degree of accuracy when compared to the SP. This provides support for the safety of task delegation, while also demonstrating that task delegation is a suitable alternative to the SP conducting the task within limited resources, or de-prioritising the task (such as mealtime observation or dysphagia screening) due to workload demands. Thus, the implications of this thesis can be broadly categorised into three themes or concepts: (1) training, (2) safety and, (3) feasibility and efficiency, as detailed here below.

6.2.1 Training prior to delegation.

The concept of high-quality training is noted as a recurrent theme throughout the current thesis. In Chapter 2, the concept of ‘training’ is introduced as a vital component of implementing AHA delegation within the policy documents of the majority of health services throughout Australia and within the professional guidelines for AHPs. As outlined in this thesis, training may take the form of a) vocational training namely the Certificate IV in Allied Health Assistance (Australian Government, 2013), or (b) ‘on the job’ training and competency attainment for task-based roles under the supervision of an AHP. Speech pathology managers in Chapter 2 reported that most services used ‘on the job’ training, including individual training or observation with the SP (76%), followed by supervised practice (61%), theoretical training (53%) and competency

package completion (47%). The concept of ‘on the job’ training is expanded in the remaining chapters of this thesis, which offer specific guidelines regarding training requirements for the individual tasks described (mealtime observations and dysphagia screening). Training within the current thesis included theoretical training with the SP, as well as task observation and competency assessment using specifically designed competency assessment tools. These training procedures may be adapted to other delegated tasks and offer a unique perspective on training requirements for AHAs conducting newly delegated tasks. In Chapter 3 in particular, the notion of training was highlighted as a key contributor to the positive perspectives reported by SPs and AHAs within the qualitative interview component of the study. Specifically, responders reported the value of having both theoretical and practical components incorporated within the training program, as well as highlighting the importance of side-by-side observation in increasing AHA confidence and minimising concerns. Similarly, responders in Chapter 5 reported that the ‘design quality and packaging’ including the training components of the dysphagia screening model were a key facilitator to model implementation within the clinical setting. Therefore, this thesis contributes significantly to the emerging knowledge base regarding training and competency requirements for AHAs conducting delegated tasks in the area of dysphagia.

The feedback from clinicians and AHAs within our studies highlights the importance of high-level education and competency packages prior to initiating AHA delegation. On a national level the growing focus on standardised education with the introduction of the Certificate IV Allied Health Assistance (Australian Government, 2013) may support this process; however, clinicians on a local level must still invest time and resources into identifying knowledge gaps within their AHA team. This may involve sourcing appropriate theoretical learning packages and

ensuring consistent competency assessment tools are utilised following training completion. The provision of high-quality training prior to task delegation may in some contexts increase workload demands on training SPs and AHA, at least initially while training programs are set up, task completion is conducted as a pair to ensure consistency and accuracy, and when closer supervision is required in areas of novel practice. However, following an initial set up and training period, it is anticipated that time demands, particularly on SPs are reduced as AHAs are able to independently conduct clinical tasks of lower acuity.

In order to clinically embed training and competency assessment frameworks utilised within the current thesis, the primary hospital site at which studies were undertaken has contributed to formal state-wide training and competency requirements in the form of clinical task instructions (CTIs) for both mealtime observation and delegated dysphagia screening, as part of a wider AHA working group. The CTI for mealtime observation is now available for download for SPs (within internal Queensland Health intranet site-https://www.health.qld.gov.au/ahwac/html/clintaskinstruction.asp) and AHAs working within Queensland Health to contribute to standardised training and competency assessment for dysphagia related task delegation. Similarly, the training and competency assessment guidelines incorporated within this thesis are now considered routine clinical practice at the primary study site.

6.2.2 Safety and accuracy.

Following completion of appropriate training the safety of delegated task completion was a key consideration within the current thesis. Throughout Chapter 3 and 4 the safety of task

delegation was highlighted by excellent levels of agreement between the SP and AHA in determining dysphagia risk following task completion. Specifically, in Chapter 3 exact agreement between AHA and SPs on the overall pass/fail criteria for the mealtime observation reached 94%, with additional safety highlighted by the fact that where exact agreement was not achieved, the AHA had made a more conservative decision. Similarly, in Chapter 4 comparison of overall result from the dysphagia screen pass/fail criteria recorded by the SP and the AHA revealed 100% exact agreement. The level of agreement reached within the current thesis speaks to the level of safety and accuracy which is achievable with AHA delegation and supports future utilisation and expansion of the AHA's role in dysphagia management. As 41% of managers reported using delegation in mealtime observation and 33% reported they would consider delegating dysphagia screening following training in Chapter 2, the findings of this thesis contribute to the evidence base supporting safety and accuracy of AHA delegation in dysphagia.

6.2.3 Feasibility and efficiency.

While training, safety, and accuracy demonstrated promising results throughout the current thesis, this thesis also presented valuable and novel information regarding the feasibility and efficiency which can be attained using AHA delegation models within dysphagia screening and management. In particular, Chapter 3 demonstrated both cost and time savings through delegating mealtime observations to a trained AHA. Specifically, to complete a mealtime observation of approximately 30 minutes a SP would cost $30, a registered nurse would cost $28, while an AHA will cost approximately $19. This allows an approximate cost saving of between $9 and $11 per observation. Once this clinical model is implemented in clinical practice it could conservatively be assumed that delegation of mealtime observation to a trained AHA would also

provide the SP with an additional 20 minutes to complete other clinical duties. Similarly, in Chapter 4 of the 48 participants in the feasibility phase, the AHA indicated that 41.7% (n=20) received an overall ‘pass’ on dysphagia screening. This highlights a potential reduction in demand by approximately 40% as these individual patients no longer require speech pathology intervention, freeing up the SP to perform other clinical or non-clinical duties.

At the primary site at which this thesis was conducted, mealtime observations are now routinely delegated to trained AHAs, improving the capacity and time that SPs are able to dedicate to other high risk clinical and/or non-clinical duties. While AHA delegation in dysphagia screening also identified potential reductions in SP time demands by delegating low risk dysphagia screening to the trained AHA. The AHA dysphagia screening model is currently being considered for expansion to include a broader ‘blanket screening’ or ‘protocol driven’ delegation approach within the hospital. This change aims to assist with early identification of patients within under-resourced clinical areas such as the respiratory wards and the emergency department. Future research is planned to evaluate this adaptation of the dysphagia screening model from that described within the current thesis.

On a broader health service level, the feasibility and efficiency findings of this thesis lend support to the growing body of evidence for workforce flexibility through task delegation. The service level benefits of appropriate and effective task delegation not only contribute to cost reduction (by delegating tasks to a cheaper workforce) but also contribute to more efficient service delivery. Thus, the results of this thesis provide additional evidence to support workforce flexibility through delegation practices. Greater capacity may be achieved by delegating low

value tasks to trained AHA, thus allowing the SP to complete more complex or high-risk tasks or may reduce the workload of the SP by ‘screening out’ inappropriate referrals or patients prior to speech pathology assessment and intervention. This increase in capacity is supported by the findings of this thesis and current evidence. For example, the introduction of a speech pathology assistant role in a rehabilitation unit, increased the clinical capacity of the SP by 28 hours per week as a result of caseload re-allocation (Nancarrow et al., 2014). Similarly, this study identified an increase of over 100 minutes per week in direct patient care and an additional increase of 38 minutes per week in quality assurance activity being completed by the SP following implementation of an assistant model (Nancarrow et al., 2014).

Contextually, the thesis exists within a time where policy and strategic direction strongly supports the notion of flexible workforce utilisation and greater efficiency of service delivery. As identified in Chapter 2, there is growing support from policy, professional bodies and key stakeholders (speech pathology managers) for the consideration of increasing task delegation to AHAs. Within the Queensland Health context (which was the focus of this thesis), AHPs have increasingly supported the use of appropriate task delegation provided the care remained focused on the patient, quality and safety of task completion was ensured, and the service provided was cost-effective and collaborative (Young et al., 2015). This policy direction towards greater efficiency in service delivery forms part of a ‘model of care’ approach which aims to ensure that services are consumer focused, align with service delivery plans and incorporate the multi-disciplinary team (Nancarrow et al., 2013). A significant strategic investment has been made to reduce barriers to workforce reform, through enhancing leadership, creating supportive workplace culture, providing training and education, as well as resolving issues of resourcing

and legislative barriers (Nancarrow et al., 2013). Therefore, as the delegation models described in this thesis become more ingrained into clinical practice, the SP is likely to spend less time conducting low acuity, low value tasks. As a result, they will be better able to provide clinical and non-clinical services to patients with more complex needs, as well as contributing to a greater number of operational demands such as further education, quality improvement and stakeholder engagement. For instance, as evidenced by the current thesis the SP can safely delegate tasks such as mealtime observation and dysphagia screening to a trained AHA, knowing that risk of dysphagia will be accurately identified. The premise of this benefit can be summarised by the statement of having 'the right person for the right job,' thus reducing the inefficiency of having a highly paid professional such as the SP performing lengthy, low acuity clinical tasks such as mealtime observations. Thus, from an operational perspective, the current thesis closely links to the policy and strategic direction of the context in which it was evaluated (i.e the Queensland public health service).

Greater efficiency and more appropriate distribution of tasks may also support greater workforce satisfaction, as the SP is able to expand their clinical skills into areas of extended or expanded scope, knowing that the AHA is able to complete more routine clinical duties safely and effectively. Working in a more innovative role or capacity, has for instance resulted in increased reported job satisfaction as a result of increased freedom and autonomy of decision making, as well as increased responsibility for AHPs (Collins et al., 2000). Conversely, the AHA may experience a greater level of job satisfaction and reward knowing they are contributing to improved clinical outcomes and patient well-being, rather than primarily supporting administrative duties. Similarly, opportunities to access training in preparation for role changes

have been demonstrated to improve job satisfaction (Collins et al., 2000), a notion that could apply to AHAs undergoing upskilling in novel clinical areas such as dysphagia. These positive perceptions and considerations of future directions were highlighted within the current thesis as a result of the qualitative stakeholder interviews conducted in Chapter 3 and Chapter 5.

Introducing operational level change through increased task delegation is however, not without barriers. Young and colleagues (2015) describe a number of key barriers to the greater adoption of delegation models, which include cultural barriers, operational issues, the time and resource requirements of education and training, as well as concerns regarding liability and accountability. These challenges were encountered by one site in particular in Chapter 5, due to the difficulty of introducing a delegation model within existing operational and contextual frameworks. Similarly, under-utilisation of AHAs may be the result of limited knowledge regarding AHA scope, limited time to train the AHA, reluctance to delegate on behalf of the AHP and a limited relationship between the AHA and AHP (Stute et al., 2014). It is hoped that the results of the current thesis may assist in addressing some of these barriers, particularly regarding the defined scope of AHAs with regards to dysphagia related tasks and an improved understanding and relationship between the SP and our AHA colleagues. From an operational perspective it is hoped that this thesis lends support to increasing task delegation to AHAs following appropriate training. While policy and practice are increasingly supportive of this transition to greater delegation, the context and operational framework surrounding these models remain key influences on the ‘success’ or ‘failure’ of a model’s implementation (as demonstrated in Chapter 5). However, given the high degree of accuracy achieved by AHAs for delegated dysphagia tasks and a comprehensive overview of considerations, facilitators and barriers to

introducing an AHA delegation model this thesis may guide implementation of AHA delegation in dysphagia management within the acute settings' operational framework.

Thus, the feasibility and efficiency of AHA task delegation in the area of dysphagia management identified in the current thesis, lends support to a growing body of evidence which supports workforce flexibility through delegation and role extension for the AHA following appropriate training. Similarly, the accuracy of dysphagia task completion identified in Chapter 3 and 4 of this thesis supports the inclusion of mealtime observation and dysphagia screening as tasks within the scope of practice for a trained AHA. This expansion of AHA scope has the potential to reduce workload demands and reduce costs for speech pathology services managing dysphagia in the acute setting.

6.3 Clinical Implications

Several important clinical findings have arisen from the outcomes of the current thesis. For clinicians working in healthcare, the current evidence suggests that dysphagia related tasks such as dysphagia screening and mealtime observation can be delegated safely to an AHA, who following appropriate training is able to make accurate judgements regarding a patient's dysphagia risk. Similarly, with regards to dysphagia screening evidence from Chapter 4 suggests a reduction in workload demand of approximately 40% can be achieved in the area of 'low risk' dysphagia referrals, highlighting the significant opportunity for greater efficiency in workforce utilisation when using AHA delegation. Reduced time demands were also identified in Chapter 3, where AHA completed mealtime observations reduced both time and cost outcomes as SPs were no longer required to perform time intensive observations. Task delegation in dysphagia to

trained AHAs is not only considered accurate and safe, but also has the support of stakeholders and policy documents, though best models of implementation are still to be refined.

While the introduction of AHA delegation in dysphagia related tasks was identified as safe and accurate within the current thesis, there remains some questions regarding the best clinical model in which to implement these delegated tasks. In Chapter 5 particularly, a key barrier to ongoing implementation was the 'adaptability' of the screening tool selected in relation to the implementation environment. Clinicians felt that the EAT-10 (Belafsky et al., 2008) increased failure rates due to high sensitivity; however, this finding must be carefully balanced with the risk of under-identification. To minimise the impact of selection bias (by delegating patients who have already been identified as at risk of dysphagia due to referral to the SP), a broader approach may be suggested such as changes to the process of delegation. One option is to use a blanket screening approach commonly utilised by nursing staff when initiating dysphagia screening. As many participants in Chapter 4 were noted to be at risk of dysphagia due to respiratory conditions, the expansion of AHA completed dysphagia screening to a blanket approach for specific populations such as individuals with Chronic Obstructive Pulmonary Disease (COPD) could be considered as a clinical implication of the current thesis. Thus prior to widespread introduction, AHA delegation in the area of dysphagia management requires careful consideration of the clinical context and the healthcare goals. Similarly, the concepts and differences between direct delegation (i.e. SP delegates a specific patient for whom they have received a referral) compared to blanket or protocol drive delegation (for example the AHA conducts dysphagia screening on all patients admitted with a respiratory condition) warrant further clinical consideration and refinement. This consideration of contextual factors must

include an evaluation not only of how best to meet to patient needs, but also how to support the reduction in workload demand on clinical staff, as well as how the new delegation practices fit into existing staffing mix and local needs (Lizarondo et al., 2010). While direct delegation has the clinical advantage of potentially reducing the number of patients that require a formal assessment by the SP, there does appear to be a risk of 'over-referral' which must be carefully balanced with patient safety. Contrastingly blanket or protocol driven delegation may in fact increase the demand on speech pathology services initially, as previously under-identified patients require speech pathology intervention following AHA screening/observation. However, this initial increase in service demand may contribute to greater safety and accuracy of dysphagia risk identification, facilitating early intervention and reducing the risk of significant dysphagia complications as outlined in Chapter 1.

6.3.1 Implications for people with dysphagia.

Results of the current thesis indicated that in particular dysphagia screening and mealtime observation are clinical tasks which can be accurately and safely conducted by a trained AHA. The early identification of potential risk factors through AHA conducted dysphagia screening may prevent the development of secondary complications such as aspiration pneumonia, malnutrition or patient distress. Similarly, AHA conducted mealtime observations may provide a more comprehensive understanding of the patient's tolerance during natural mealtime behaviour with regards to eating and drinking, as well as aspiration risk. In the elderly population in particular, 41% of patients reported anxiety at mealtimes, while only 45% of people with dysphagia found eating enjoyable (Ekberg et al., 2002). As the population ages, it becomes vital to ensure swallow safety is maintained, particularly in a functional capacity (such as during a

meal). Signs of difficulty with meals may only be highlighted following longer observation, thus having the opportunity to delegate this time intensive task may contribute to a greater number of patients with dysphagia being identified and appropriately managed. As both tasks may be de-prioritised by the SP in clinical practice to save time and resources, the re-distribution of these tasks to a trained AHA ensures patients continue to have access to early identification and prompt response if concerns are identified.

The introduction of greater delegation practices in the area of dysphagia management may also increase frequency of SP led sessions and time spent with patients completing more complex clinical tasks, as well as providing a greater consistency in care delivery as tasks are not de-prioritised on a regular basis. This capacity to offer a greater intensity of service delivery without the increased cost of employing additional speech pathology hours may have great benefit to patient's clinical outcomes and perceived satisfaction with the healthcare service. Some studies have also identified that patient satisfaction is improved when tasks are completed with an assistant, due to similarity in background and less complicated language used when providing explanations and feedback (Kennedy, Ubido, Elhassan, Price, & Stephton, 1999; Mackey & Nancarrow, 2005). Following appropriate training, the AHA is well placed to provide lay explanations of observation, screening and treatment tasks, as well as conducting patient centred communication and providing regular feedback to the SP regarding patient progress and identified concerns.

6.4 Summary of Implications and Impact.

The implications of this thesis may be broadly described as contributing to the knowledge and evidence regarding training, safety and feasibility of AHA delegation in dysphagia management. The safety, efficiency and positive perceptions of AHA delegation for dysphagia related tasks identified within this thesis has a number of clinical, operational and patient specific implications. The benefits of AHA delegation in dysphagia management include the early identification and escalation of dysphagia risk factors (through accurate completion of tasks such as dysphagia screening and mealtime observation) without necessarily increasing demand on limited speech pathology resources. Within a broader operational context, the findings of this thesis therefore lend support to a growing body of policy and literature that supports the notion of 'workforce flexibility' including greater consideration of delegation practices and the expansion of roles such as the AHA.

6.5 Limitations

Although the studies included in the current thesis have provided positive outcomes supporting the use of AHA delegation in the area of dysphagia management, there are some limitations. These have been acknowledged within each chapter and are summarised here. Overall, limitations of the included studies include a small sample size largely due to the clinical constraints of recruitment. Limitations also exist with regards to the rigour of clinical assessments used to compare accuracy of AHA decision making with regards to dysphagia risk (for instance no instrumental assessments such as FEES or VFSS were utilised to validate outcomes). Similarly, the quality and outcomes of training provided prior to task delegation was limited by a lack of formal pre- and post-training knowledge evaluation in relation to AHA

training provision. The thesis would be further improved by a formal economic evaluation to ensure cost savings and efficiency are true and accurate. However, this was beyond the scope of the thesis given resources constraints and the difficulty of performing health economic evaluations.

Study 1 which formed the basis of Chapter 2 was limited by reduced sample size and the representativeness of the sample selected. While speech pathology managers were specifically targeted for this study, this may have resulted in a narrowing of perspective regarding clinical utilisation of AHAs, as managers may not be privy to day-to-day delegation and training decisions. Furthermore, the document review focused only on Australian health services and English-speaking professional position papers which may not reflect practice patterns in other countries, where assistants may be more broadly utilised due to their higher educational requirements or more narrowly due to more recent introduction.

Chapter 3 also reported a relatively small sample size which similarly contributes to the limitations of the study. Further, evaluation of the training component and its adequacy is also limited by the nature of the clinical population studied. It is possible that different or additional training needs may be required depending on the typical patient cohorts seen within a service. Requiring only three joint observations prior to AHA competency sign off may also not be appropriate in all settings, as AHAs come from a variety of skills and previous experiences. Furthermore, the study design did not include a comparator group of non-trained AHAs, which further limits any conclusions regarding the adequacy of the training component. Finally, variation in numbers of observations completed by each AHA and SP may impact level of

agreement. Finally, the study lacked a full and formal economic analysis to ensure cost efficiencies were significant and maintained.

Patient selection in Chapter 4 also highlights limitations, as a true random and consecutive sample could not be collected due to clinical constraints (recruitment depended on staff available at each site and the identification of appropriate ‘low risk’ patients referred to the SP or identified from prospective screening of the ward list). In addition, given the small sample size, the combination of screening tools used, and the lack of information regarding AHA training adequacy such as pre-post training knowledge measures the results should be interpreted as initial feasibility data only. Similarly, as this study did not aim to validate the dysphagia screening tools utilised, the clinical outcomes should also be interpreted with caution as following screening failure no instrumental swallow examination was performed to categorically identify the presence or absence of dysphagia. As per Chapter 3, for services considering this model of care, a more formal cost analysis should be undertaken including accounting for time and cost of training provision and the impact of potential over-referrals.

Chapter 5 highlights several limitations with regards to qualitative interviewing, for instance as the interview guide was designed to include open ended questions each question did not specifically link to a CFIR sub-category. It is therefore possible that the constructs that did not emerge from the interview responses was related to the open-ended questions asked. Secondly, key stakeholders who were instrumental in implementing the model who participated in the interview may introduce bias. Bias could be positive with participants feeling a sense of connection and/or achievement to the model implementation or negative given the sometimes

time intensive process of implementation and/or perceived external pressure to implement. Thirdly, the perceptual interviews were conducted at a specific time-point only, reducing the ability to collect information regarding the emergence of the constructs over the course of the implementation process (which at some sites was several years).

6.6 Future directions

The current thesis presented positive clinical, operational and perceptual outcomes following introduction of AHA delegation for selected dysphagia tasks. It is hoped that the evidence presented supports interested sites and clinicians in exploring the role of a trained AHA workforce in the area of dysphagia management, in an attempt to reduce workforce demand and ensure best patient care is achieved. It is, however, important to acknowledge the strategic and contextual influences on implementation success. As described by Nancarrow and colleagues (2013) the continued adoption and success of models, such as those described in this thesis, is heavily dependent on the engagement of key stakeholders, the clarity and consistency of competencies and role definitions, the confidence of delegating clinicians and the satisfaction of staff and stakeholders with the model's introduction. There is therefore a need to continue dissemination of high-quality research to engage and inform stakeholders, improve clarity and consistency of role and scope of practice definitions and improve confidence of clinicians delegating tasks. Similarly, while this thesis lends initial support to the type of training provided prior to AHA delegation and demonstrates safety in extending the AHA's scope, a broader healthcare approach to defining AHA scope of practice and implementing consistency in the approach to training and competency programs would be of great benefit in the future.

6.6.1 Future application of delegation in clinical practice.

Delegation models are relatively new and novel in the context of the Allied Health workforce, thus as stated by Brooks and colleagues (2008) there is “opportunity to experiment with various models of task substitution through education, service delivery and consumer partnership” (p.g160). In clinical practice, a key future direction is the consideration of what other clinical dysphagia related tasks may be suitable for AHA delegation. As identified by stakeholder survey in Chapter 2, the provision of diet and fluid education appears to be an area where AHA delegation is increasingly being considered, however, to date has not been thoroughly evaluated for quality and safety of education provided. In clinical practice, recommendations regarding modified diets and fluids is commonplace to maximise swallow safety. Given that diet and fluid modifications may be a significant change for the patient and their caregivers, patients and caregivers require support and training to optimise oral intake and swallow safety (Chadwick, Joiffe, & Goldbard, 2003; Chadwick, Joliffe, Goldbard, & Burton, 2006; Tredinnick & Cocks, 2014). As limited evidence exists to support the type of education required, or the individual best placed to provide this education, an evaluation of AHA delivered diet and fluid education would be of great clinical value.

An additional opportunity for future evaluation of task delegation to AHAs, in the area of dysphagia management, is for specific dysphagia rehabilitation tasks. Dysphagia therapy may include rehabilitative exercises as swallow manoeuvres including the supraglottic swallow (Logemann, 1998), Mendelsohn manoeuvre (Logemann, 1999), effortful swallow (Logemann, 1999), Masako manoeuvre (Lazarus, Logemann, Song, Rademaker, & Kahrilas, 2002) and Shaker exercise (Shaker et al., 2002; Speyer, 2012). In addition, treatment programs may also

include the use of sensory and motor behavioural therapeutic techniques such oromotor exercises (Robbins et al., 2007; Speyer, 2012) and sensory stimulation (Logemann et al., 1995; Rosenbek et al., 1998). These therapeutic techniques require repetitive practice and are recommended to be completed intensively with sessions up to 5 times weekly scheduled by many clinicians (Gonzalez-Fernandez et al., 2013). This level of intensity is rarely feasible in the acute hospital setting due to time demands on SPs, however could present a novel opportunity for AHAs to conduct these therapeutic techniques with patients following delegation from the treating SP.

While the current thesis focused on exploring dysphagia task delegation to trained AHAs in the inpatient acute setting, there is significant opportunity in other areas of the public service such as in the speech pathology outpatient domain. While AHAs currently perform a number of administrative and support duties in this setting such as conducting clinic set up, completing equipment maintenance and cleaning, developing resources and general administrative tasks (e.g. photocopying, laminating) there is substantial opportunity in this field to take on greater clinically focused tasks. In the area of dysphagia management, tasks which may be appropriate for delegation in the outpatient setting may include patient phone calls to determine level of understanding and compliance with recommendations, specific therapeutic tasks and education (as described above). As per any delegation model, the SP in the outpatient setting would remain responsible for all care delivery decisions including diagnosis, type of intervention and frequency as well as decisions regarding suitability for discharge/treatment completion. The SP would also need to be co-located and available for discussion while the AHA is conducting delegated tasks. This model would therefore not be intended to replace SP provided services, rather it would aid increased frequency and intensity of intervention provided and may reduce

time-demand on SPs conducting time-intensive tasks such as standard provision of education. In line with the findings of this thesis, the role of AHAs within the outpatient setting at the primary study site is currently being expanded. For instance, the principles of training and delegation practices identified within this thesis are being expanded to consider the role of the AHA in the outpatient setting to provide dysphagia therapy, as well as modified diet and fluid education. The operational impact of this practice change will be evaluated under a research framework.

6.6.2 The future of AHA training.

The continued and expanded utilisation of delegation models into the future of clinical practice, however, relies on the introduction of greater consistency with regards to AHA training and competency assessment. In Australia, the Certificate III and IV in Allied Health Assistance has been introduced in an attempt to provide a nationally endorsed, competency standard for the assistant workforce (Australian Qualifications Framework Advisory Board, 2007). However, the rate and impact of adoption of this nationally recognised program remains poorly understood. Within the context of the current thesis (Queensland Health), the completion of vocational training is not a mandatory requirement of employment for AHAs. Thus, site specific training and individual assistant characteristics currently remain strong influences of delegation decisions. However, as described by Somerville and colleagues (2018) the type and frequency of tasks delegated to an AHA should be based on documented learning, experience and demonstrated task performance, rather than individual staff relationships, which again highlights the importance of local training delivery. Task specific training should be delivered by an AHP who is acting in a supervisory role for the AHA. For instance, the provision of clear and consistent feedback, setting of clear expectations, having access to an approachable supervisor

and offering opportunities to work shadow and observe the AHP performing the task are likely to be of great benefit to the AHA (Ostergren, 2012). However, these opportunities and suggestions must be formalised into training frameworks and organisational policy to ensure consistent utilisation. As described by Nancarrow and colleagues (2014), an assessment plan for AHA delegated tasks should include: (1) the purpose and context of the assessment, (2) assessment benchmarks, (3) method and tools used to collect evidence, (4) timeline for collection of evidence, (5) reasonable adjustments, (6) recognition of prior learning, and (7) provision of resources such as writing equipment, assessment tool and patient information. The future of dysphagia delegation in clinical practice therefore relies on the development of standardised training pathways, resources and assessment materials for each delegated task.

6.6.3 The future of delegation practices.

Clinical adoption of delegation models also relies on a greater understanding of the fundamental principles of delegation. In current clinical practice delegation to AHAs remains under-utilised due to the AHA's lack of familiarity with the task, the influence of the working relationship between the delegating AHP and the assistant, the confidence of the AHP in the assistant's ability to perform the task and beliefs regarding scope of practice (Somerville et al., 2015). Similarly, pre-vocational training for AHPs fails to provide adequate training in supervisory or delegation skills vital to supervising and supporting the assistant workforce (Schmidt, 2013). While the current thesis focuses primarily on the safety and perception of the delegated task, rather than the act of delegation, there is significant future demand to consider the act of delegation itself and the factors that influence the decision to delegate. Delegation is a complex clinical skill which requires the delegating clinician to consider the skill and ability of

the person the task is delegated to, as well as their own responsibility to monitor and ensure appropriate task completion. There remains a paucity of information regarding Allied Health Professionals' skills and understanding of the delegation process, nor are opportunities for training delegation skills freely available. Access to training in the area of delegation may be of particular importance as a study in the nursing literature identified a statistically significant increase in delegation confidence for nurses who had participated in training programs (Yoon, Kim, & Shin, 2016). As proposed by Schmidt (2013), delegation and supervisory skills may in the future be part of pre-vocational training for AHPs. This would be of particular importance as increased flexibility of the AHP workforce develops and the greater acceptance of AHA delegation models forms part of every-day clinical practice. Similarly, the increased availability of organisational and departmental policies which guide appropriate delegation practices would be of great benefit, as identified in the nursing literature (Gillen & Graffin, 2010). Thus, future clinical directions should focus on a greater understanding of the influencing factors that guide delegation, how training regarding the quality of delegation could be improved and investigating the perceptions of both AHPs and assistants regarding delegation practices and outcomes.

The future of delegation in clinical practice also relies on the consideration and re-framing of perceived role threat described by many AHPs when delegation models are proposed. Challenges to acceptance of assistants in the field of speech pathology include the perceived fear of job loss or role threat and a concern regarding loss of professional autonomy (Goldberg et al., 2002a, 2002b). Concerns regarding role security and professional threat require a greater understanding of delegation models and scope of practice delineation between the delegating AHP and the AHA. As an AHA cannot work without the supervision and oversight of a certified

AHP, there is little evidence to support perceived professional threat. As described by Goldberg and colleagues (2002a; 2002b) a clinician's familiarity with both AHP and AHA practice roles and scope of practice will ensure appropriate allocation of professional responsibilities and ensure a workforce split which ensures sufficient supervision and training is available to AHA positions. Overcoming perceived role threat, is likely to improve frequency and quality of task delegation, as it is identified as a key barrier to current high-quality delegation practices (Munn et al., 2014; O'Brien et al., 2013; Stute et al., 2013).

6.6.4 Future research.

There is a great deal of opportunity for future research in this field. Firstly, while cost savings are frequently cited as a reason to consider task substitution through delegation further economic evaluation of these models is critical to ensure true cost savings are demonstrated. As outlined by Dubois and Singh (2009) cost savings through role substitution is dependent on a number of factors including the need to ensure equal quality of care is provided, the consideration of training costs and the impact of reduced autonomy as supervision is required from a delegating professional. An in-depth economic evaluation of cost changes when utilising an AHA delegation model would be of great value in this field, to ensure the time investments made during training and supervision are reflected in financial and operational outcomes for the workforce and the health service. The sustainability of introduced delegation models also warrants further research and evaluation. A longitudinal study investigating the long-term outcomes of AHA task delegation on operational outcomes such as time saved, re-allocation of tasks, cost savings and staff/patient satisfaction would be of great value in highlighting the feasibility of continued AHA delegation models.

Secondly, while the current thesis provides initial evidence that delegated dysphagia tasks are safely completed by an AHA the current thesis fails to include patient perspectives regarding task delegation. While the literature in this field demonstrates a paucity of evidence regarding the perceptions of patients with regards to delegation practices, failure to consider patient outcomes and consider patient perspectives has been shown to limit success of delegation model implementation (Nancarrow et al., 2013). Patient perspectives in a study of consumers reporting on care delegated to dental therapists highlighted the views that patients rated trust and experience greater than qualifications of the treating clinician and focused on affective behaviour and positive communication, as well as continuity of care (Dyers, Owens, & Robinson, 2013). However, further exploration of patient perspectives must also consider the fundamental difference between a structured and rigid delegated task interaction and the more therapeutic, inductive reasoning utilised by clinicians when conducting patient interactions. When considering mealtime observations for instance, the removal of a meal following an identified 'fail' on the MTOT may for instance be upsetting or confusing for a patient who may have previously experienced a similar mealtime experience with an SP who trialled therapeutic or compensatory strategies prior to removing meal items which were deemed unsafe. Similarly, the need for consultation between the AHA and the SP following task completion may result in a time delay during which time the patient may be uncertain regarding the task's outcome or be unaware of findings or proposed intervention. These variations in interactions between the patient and the AHA during delegated tasks warrant further investigation to ensure satisfaction and acceptability of task delegation for the patient. When considering these findings in the context of AHA delegation, it may be important to incorporate an explanation of the AHA's role

and experience into delegated tasks, as well as ensuring assistants are well educated regarding positive interaction and communication styles to put patients at ease and ensure positive outcomes from tasks delegated.

6.6.5 Summary of future directions.

While the studies included in the current thesis highlight the safety and feasibility of AHA delegation in the acute setting and provide evidence regarding the current context of delegation practices, the current thesis also highlights several areas of exciting future research and development including the consideration of AHA delegation for additional dysphagia related tasks and a larger number of clinical contexts. In particular, a broader consideration of delegation principles including both adjustments in how delegation occurs in the clinical setting, as well as how delegation principles are taught to both AHPs and AHAs would be of great benefit in this field. In addition, while this thesis demonstrates the importance of training and ensuring AHA competence to perform delegated tasks, greater consistency with regards to training frameworks within the healthcare sector may increase the utilisation and uptake of AHA delegation models even further. Finally, future research relating to the economic benefit of AHA delegation models would lend further support to this innovative approach to workforce demands.

6.7 Conclusion

In conclusion, delegation of selected dysphagia tasks to trained AHAs is safe, practical and effective method for identifying dysphagia risk, without increasing the workload demands on stretched speech pathology resources. Delegation models have the potential to address healthcare issues such as increasing cost of service delivery and increased clinical demand on AHPs such as

SPs. The series of three investigations, making up the four central chapters of this thesis informs the use of AHA delegation for dysphagia screening and mealtime observation, while also offering a unique perspective regarding current perceptions of AHA delegation and current organisational context within the health service. Given demonstrated safety and feasibility of AHA delegation with selected dysphagia tasks described in this thesis, the opportunity and potential for increasing the role and scope of AHAs is significant. This support for greater workforce flexibility is key to achieving a cost effective, high quality and efficient healthcare system in which ‘the right person, does the right job.’

7 References

Aiken, L. H., Clarke, S. P., Sloane, D. M., Sochalski, J., & Silber, J. H. (2002). Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. *Jama, 288*(16), 1987-1993. doi:10.1001/jama.288.16.1987

Airoldi, M., Garzaro, M., Raimondo, L., Pecorari, G., Giordano, C., Varetto, A., Caldera, P., & Torta, R. (2011). Functional and psychological evaluation after flap reconstruction plus radiotherapy in oral cancer. *Head & Neck, 33*(4), 458-468. doi:https://doi.org/10.1002/hed.21471

Al-Khaled, M., Matthis, C., Binder, A., Mudter, J., Schattschneider, J., Pulkowski, U., …Valdueza, J. M. (2016). Dysphagia in patients with acute ischemic stroke: early dysphagia screening may reduce stroke-related pneumonia and improve stroke outcomes. *Cerebrovascular Diseases, 42*(1-2), 81-89. doi: https://doi.org/10.1159/000445299

Allied Health Professions Office of Queensland (2017). *Speech pathology learner guide: provide support in dysphagia management.* Retrieved from https://www.health.qld.gov.au/__data/assets/pdf_file/0025/650581/LG-dysphagia-mgmt.pdf

Allied Health Professions Office of Queensland. (2016). *AHA framework.* Retrieved from www.health.qld.gov.au/ahwac/default.asp

Allied Health Professions Office of Queensland. (2013). *Report on advanced clinical practice framework.* Retrieved from https://www.health.qld.gov.au/__data/assets/pdf_file/0018/148230/ahp-advclinicalprac.pdf

Allied Health Professions Office of Queensland. (2013b). *A framework for local implementation and support of skill-sharing and delegation practice for allied health services in*

the Queensland public health system. Retrieved from https://www.health.qld.gov.au/__data/assets/pdf_file/0029/156872/ssdp-framework.pdf

Altman, K.W., Yu, G. P., & Schaefer, S. D. (2010). Consequence of dysphagia in the hospitalized patient: impact on prognosis and hospital resources. *Archives of Otolaryngology–Head & Neck Surgery*, *136*(8), 784-789. doi:10.1001/archoto.2010.129

American Speech Language and hearing Association (ASHA). (2013). *Speech Language Policy Assistants.* Retrieved from www.asha.org/PRPSpecificTopic.aspx?folderid=8589934664&section=Key_Issues

American Speech Language and Hearing Association (ASHA). (2011). *SLP health care survey: caseload characteristics.*. Retrieved from https://www.asha.org/uploadedFiles/HC11-Caseload-Characteristics.pdf

American Speech-Language-Hearing Association. (2002). *Roles of speech-language pathologists in swallowing and feeding disorders.* Retrieved from https://www.asha.org/policy/PS2002-00109/

American Speech-Language-Hearing Association. (1997). Position statement: Multiskilled personnel. *ASHA*, *39*(17). Retrieved from https://www.asha.org/policy/PS1997-00225/

Antonios, N., Carnaby-Mann, G., Crary, M., Miller, L., Hubbard, H., Hood, K., … Silliman, S. (2010). Analysis of a physician tool for evaluating dysphagia on an inpatient stroke unit: the modified Mann Assessment of Swallowing Ability. *Journal of Stroke and Cerebrovascular Diseases*, *19*(1), 49-57. doi: https://doi.org/10.1016/j.jstrokecerebrovasdis.2009.03.007

Armstrong, E. (2003). Communication culture in acute speech pathology settings: Current issues. *Advances in Speech Language Pathology*, *5*(2), 137-143. doi: https://doi.org/10.1080/14417040510001669171

Australia Physiotherapy Association (2008). *Working with physiotherapy assistants or other support workers.* Retrieved from https://www.physiotherapy.asn.au/DocumentsFolder/Advocacy_Position_Physio_Assistant_2008.pdf

Australian Bureau of Statistics. (2015). *Patient experiences in Australia: States and Territories, 2013-2014.* Retrieved from http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/4839.0.55.002Main%20Features42013-14

Australian Bureau of Statistics. (2010). *Australian Social Trends.* Cat. No. 4102.0. Retrieved from http://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/F157BCD66301BDC3CA2577AC00157B0A?opendocument

Australian Capital Territory Health. (2014). *Supervision and delegation framework AHAs- a guide to governance in the ACT.* Retrieved from https://www.health.act.gov.au/sites/default/files/Supervision%20and%20delegation%20framework%20for%20allied%20health%20assistants-%20a%20guide%20to%20governance%20in%20the%20ACT.pdf

Australian Government Department of Health. (2017). *Public Hospitals.* Retrieved from http://www.health.gov.au/internet/main/publishing.nsf/Content/public-hospitals

Australian Government. (2013). *Qualifications details-Certificate IV Allied Health Assistance.* Retrieved from https://training.gov.au/Training/Details/HLT42512#

Australian Institute of Health and Welfare. (2016). *25 years of health expenditure in Australia 1989–90 to 2013–14; Cat. no. HWE 66*. Canberra: Australian Institute of Health and Welfare.

Australian Institute of Health and Welfare. (2017). *Admitted patient care 2015-2016: Australian hospital statistics.* Retrieved from https://www.aihw.gov.au/reports/hospitals/ahs-2015-16-admitted-patient-care/contents/table-of-contents

Barrett, C., Stephens, C., Hulcombe, J., & McEvoy, B. (2015). Profiling the allied health staffing of Queensland Health inpatient general rehabilitation units. *Australian Health Review, 39*(1), 89-94. doi: https://doi.org/10.1071/AH13242

Bartlett, R. S., Moore, J. E., & Thibeault, S. L. (2018). Temporal Analysis of Factors Associated with EAT-10 in Outpatients with Oropharyngeal Dysphagia from a Tertiary Care Clinic. *Dysphagia, 33*(4), 457-467. doi: https://doi.org/10.1007/s00455-018-9874-y

Bax, L., Mcfarlane, M., Green, E., & Miles, A. (2014). Speech–Language Pathologist-led Fiberoptic Endoscopic Evaluation of Swallowing: Functional Outcomes for Patients after Stroke. *Journal of Stroke and Cerebrovascular Diseases, 23*(3), E195-E200. doi: https://doi.org/10.1016/j.jstrokecerebrovasdis.2013.09.031

Baxter, S. K., & Brumfitt, S. M. (2008). Professional differences in interprofessional working. *Journal of Interprofessional Care, 22*(3), 239-251. doi: https://doi.org/10.1080/13561820802054655

Belafsky, P. C., Mouadeb, D. A., Rees, C. J., Pryor, J. C., Postma, G. N., Allen, J., & Leonard, R. J. (2008). Validity and reliability of the Eating Assessment Tool (EAT-10). *Annals of*

Otology, Rhinology & Laryngology, *117*(12), 919-924. doi: https://doi.org/10.1177/000348940811701210

Bonilha, H. S., Simpson, A. N., Ellis, C., Mauldin, P., Martin-Harris, B., & Simpson, K. (2014). The one-year attributable cost of post-stroke dysphagia. *Dysphagia*, *29*(5), 545-552. doi: https://doi.org/10.1007/s00455-014-9543-8

Bours, G. J., Speyer, R., Lemmens, J., Limburg, M., & De Wit, R. (2009). Bedside screening tests vs. videofluoroscopy or fibreoptic endoscopic evaluation of swallowing to detect dysphagia in patients with neurological disorders: systematic review. *Journal of Advanced Nursing*, *65*(3), 477-493. doi: https://doi.org/10.1111/j.1365-2648.2008.04915.x

Bowen, G. A. (2009). Document Analysis as a Qualitative Research Method. *Qualitative Research Journal*, *9*(2), 27-40. doi:10.3316/QRJ0902027

Bray, B., Smith, C., Cloud, G., Enderby, P., James, M., Paley, L., … Rudd, A. (2016). The association between delays in screening for and assessing dysphagia after acute stroke, and the risk of stroke-associated pneumonia. *Journal of Neurology, Neurosurgery & Psychiatry, 88*(1), 25-30. doi: http://dx.doi.org/10.1136/jnnp-2016-313356

Brody, R. A., Tougee-Decker, R., VonHagen, S., & Maillet, J. (2000). Role of Registered Dietitians in Dysphagia Screening. *Journal of the American Dietetic Association*, *100*(9), 1029,1037–1034,1037. https://doi.org/10.1016/S0002-8223(00)00302-3

Brodsky, M. B., Suiter, D. M., González-Fernández, M., Michtalik, H. J., Frymark, T. B., Venediktov, R., & Schooling, T. (2016). *Screening Accuracy for Aspiration Using Bedside Water Swallow Tests: A Systematic Review and Meta-Analysis. Chest*, 150(1), 148–163. doi:10.1016/j.chest.2016.03.059.

Brooks, P., Robinson, L., & Ellis, N. (2008). Options for expanding the health workforce. *Australian Health Review, 32*(1), 156-160. doi: https://doi.org/10.1071/AH080156

Bryant-Lukosius, D., Dicenso, A., Browne, G., & Pinelli, J. (2004). Advanced practice nursing roles: development, implementation and evaluation. *The Journal of Advanced Nursing, 48*(5), 519-529. doi https://doi.org/10.1111/j.1365-2648.2004.03234.x

Cabre, M., Serra-Prat, M., Palomera, E., Almirall, J., Pallares, R., & Clavé, P. (2010). Prevalence and prognostic implications of dysphagia in elderly patients with pneumonia. *Age and Ageing*, 39(1), 39-45. doi: https://doi.org/10.1093/ageing/afp100

Centre for Clinical Management Research. (2014). *Centre for clinical management framework: Consolidated framework for implementation research.* Retrieved from https://cfirguide.org/

Chadwick, D. D., Jolliffe, J., & Goldbart, J. (2002). Carer knowledge of dysphagia management strategies. *International Journal of Language & Communication Disorders, 37*(3), 345-357. doi: 10.1080/13682820210137196

Chadwick, D. D., Jolliffe, J., Goldbart, J., & Burton, M. H. (2006). Barriers to caregiver compliance with eating and drinking recommendations for adults with intellectual disabilities and dysphagia. *Journal of Applied Research in Intellectual Disabilities, 19*(2), 153-162. doi: https://doi.org/10.1111/j.1468-3148.2005.00250.x

Chatindiara, I., Allen, J., Popman, A., Patel, D., Richter, M., Kruger, M., & Wham, C. (2018). Dysphagia risk, low muscle strength and poor cognition predict malnutrition risk in older adults at hospital admission. *BMC Geriatrics, 18*(1), 1-8.

Chau, K. H. T., & Kung, C. M. A. (2009). Patient dose during videofluoroscopy swallowing studies in a Hong Kong public hospital. *Dysphagia*, *24*(4), 387. doi: https://doi.org/10.1007/s00455-009-9214-3

Cheney, D. M., Siddiqui, M. T., Litts, J. K., Kuhn, M. A., & Belafsky, P. C. (2015). The ability of the 10-item eating assessment tool (EAT-10) to predict aspiration risk in persons with dysphagia. *Annals of Otology, Rhinology & Laryngology*, *124*(5), 351-354. doi: https://doi.org/10.1177/0003489414558107

Cichero, J. A., Heaton, S., & Bassett, L. (2009). Triaging dysphagia: nurse screening for dysphagia in an acute hospital. *Journal of Clinical Nursing*, *18*(11), 1649-1659. doi: https://doi.org/10.1111/j.1365-2702.2009.02797.x

Cichero, J., & Murdoch, B. E. (2006). *Dysphagia: foundation, theory and practice*. Chichester, England: John Wiley & Sons.

Clatyon, N. A., Carnaby, G. D., Peters, M. J., & Ing, A. J. (2014). Impaired laryngopharyngeal sensitivity in patients with COPD: The association with swallow function. *International Journal of Speech-Language Pathology, 16*, 615-623. doi: https://doi.org/10.3109/17549507.2014.882987

Clavé, P., Arreola, V., Romea, M., Medina, L., Palomera, E., & Serra-Prat, M. (2008). Accuracy of the volume-viscosity swallow test for clinical screening of oropharyngeal dysphagia and aspiration. *Clinical Nutrition*, *27*(6), 806-815. doi: https://doi.org/10.1016/j.clnu.2008.06.011

Coates, C., & Bakheit, A. M. O. (1997). Dysphagia in Parkinson's disease. *European Neurology*, *38*(1), 49-52. doi: 10.1159/000112902

Code, C., & Heron, C. (2003). Services for aphasia, other acquired adult neurogenic communication and swallowing disorders in the United Kingdom, 2000. *Disability and Rehabilitation*, *25*(21), 1231-1237. doi: https://doi.org/10.1080/0963828031000159996l

Collins, K., Jones, M.L., McDonnell, A., Read, S., Jones, R., & Cameron, A. (2000). Do new roles contribute to job satisfaction and retention of staff in nursing and professions allied to medicine. *Journal Nursing Management* 2000, 8(1):3-12. doi: https://doi.org/10.1046/j.1365-2834.2000.00149_8_1.x

Consumer Health Forum Australia. (2018). *Acute and Primary Care.* Retrieved from http://ourhealth.org.au/rep-support/consumer-reps-guide-australias-health-system/parts-health-system#.WuZwcHq6Vbo

Creswell, J. W., & Creswell, J. D. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches.* California: Sage Publications.

Cvejic, L., & Bardin, P.G. (2018). Swallow and aspiration in chronic obstructive pulmonary disease. *American Journal of Respiratory and Critical Care medicine*, *198*(9), 1122-1129. doi: https://doi.org/10.1164/rccm.201804-0704PP

Cvejic, L., Harding, R., Churchward, T., Turton, A., Finlay, P., Massey, D., … & Guy, P. (2011). Laryngeal penetration and aspiration in individuals with stable COPD. *Respirology*, *16*(2), 269-275. doi: https://doi.org/10.1111/j.1440-1843.2010.01875.x

Damschroder, L, J., & Lowery, J, C. (2013). Evaluation of a large-scale weight management program using the consolidated framework for implementation research (CFIR). *Implementation Science, 8, 51.* doi: https://doi.org/10.1186/1748-5908-8-51

Damschroder, L, J., Aron, D, C., Keith, R, E., Kirsh, S, R., Alexander, J, A., & Lowery, J, C. (2009). Fostering implementation of health services research findings into practice: A

consolidated framework for advancing implementation science. *Implementation Science, 4, 50.* doi: https://doi.org/10.1186/1748-5908-4-50

Daniels, S. K., Anderson, J. A., & Willson, P. C. (2012). Valid items for screening dysphagia risk in patients with stroke: a systematic review. *Stroke, 43*(3), 892-897. doi: https://doi.org/10.1161/STROKEAHA.111.640946

Davenport, R. J., Dennis, M. S., Wellwood, I., & Warlow, C. P. (1996). Complications after acute stroke. *Stroke, 27*(3), 415-420. doi: https://doi.org/10.1161/01.STR.27.3.415

Davenport, S. J., Arnold, M., Hua, C., Schenck, A., Batten, S., & Taylor, N. F. (2015). Physical activity levels during acute inpatient admission after hip fracture are very low. *Physiotherapy Research International, 20*(3), 174-181. doi: https://doi.org/10.1002/pri.1616

Delegation [Def. 1]. (n.d.). In *Merriam Webster Online,* Retrieved April 28, 2018, from https://www.merriam-webster.com/dictionary/delegation

Department of Health Western Australia. (2015). *Supporting and developing the Allied Health Assistant workforce.* Retrieved from http://ww2.health.wa.gov.au/~/media/Files/Corporate/general%20documents/Chief%20Health%20Professions%20Office/PDF/Supporting-and-Developing-the-Allied-Health-Assistant-Workforce-2015.pdf

Department of Health Western Australia. (2009). *Delegation, monitoring and evaluation of AHAs.* Retrieved from http://www.wacountry.health.wa.gov.au/fileadmin/sections/allied_health/WACHS_R_AHA_DelegationMonitoringEvaluation.pdf

DePippo, K. L., Holas, M. A., & Reding, M. J. (1992). Validation of the 3-oz water swallow test for aspiration following stroke. *Archives of Neurology, 49*(12), 1259-1261. doi:10.1001/archneur.1992.00530360057018

Dietitians Association of Australia. (2007). *Scope of practice: support staff in nutrition and dietetic services.* Retrieved from https://daa.asn.au/wp-content/uploads/2015/05/Nutrition-Support-Workers-Scope-of-Practice-2016.pdf

Doeltgen, S.H., Attril, S., White, S.L., Murray, J., & Hammond, S. (2018). *The influence of dysphagia on length of stay and health service expenditure- a systematic review and meta-analysis.* Poster presented at the meeting of Dysphagia Research Society (DRS), Baltimore, Maryland.

Dubois, C.A., & Singh, D. (2009). From staff-mix to skill-mix and beyond: Towards a systemic approach to health workforce management. *Human Resources for Health, 7,* 87. doi: https://doi.org/10.1186/1478-4491-7-87

Duckett, S. (2005a). Health workforce design for the 21st century. *Australian Health Review, 29*(2), 201-2010. doi: https://doi.org/10.1071/AH050201

Duckett, S. (2005b). Interventions to facilitate health workforce restructure. *Australia and New Zealand Health Policy, 2,* 14. doi: https://doi.org/10.1186/1743-8462-2-14

Dunlop, G. (2010). The role of APs and the Allied Health Professions-a Scottish perspective. *British Journal of Healthcare Assistants, 4*(7), 343-346. doi: https://doi.org/10.12968/bjha.2010.4.7.48913

Dyers, T., Owens, J., & Robinson, P. (2013). What matters to patients when their care is delegated to dental therapists? *British Dental Journal, 214*(6), E17. doi: https://doi.org/10.1038/sj.bdj.2013.275

Ekberg, O., Hamdy, S., Woisard, V., Wuttge–Hannig, A., & Ortega, P. (2002). Social and psychological burden of dysphagia: its impact on diagnosis and treatment. *Dysphagia, 17*(2), 139-146. doi: https://doi.org/10.1007/s00455-001-0113-5

Ellis, B., & Connell, N. A. D. (2001). Factors determining the current use of physiotherapy assistants: Views on their future role in the South and West UK region. *Physiotherapy, 87*(2), 73-82. doi: https://doi.org/10.1016/S0031-9406(05)60444-0

Enderby, P., & Petheram, B. (2002). Has aphasia therapy been swallowed up? *Clinical Rehabilitation*, *16*(6), 604-608. doi: https://doi.org/10.1191/0269215502cr505oa

Ercilla, M., Ripa, C., Gayan, M., Arteche, J. M., Odriozola, B., Bello, M. C., & Barral, I. (2012). Prevalence of dysphagia in the older using 'Eating Assessment Tool-10'. *European Journal of Hospital Pharmacy: Science and Practice, 19*(2), 205-206. doi: http://dx.doi.org/10.1136/ejhpharm-2012-000074.316

Farber BA: *Crisis in Education: Stress and Burnout in the American Teachers.* San Francisco: Jossey-Bass; 1991.

FitzGerald, G., Toloo, S., Rego, J., Ting, J., Aitken, P. & Tippett, V. (2012). Demand for public hospital emergency department services in Australia: 2000–2001 to 2009–2010. *Emergency Medicine Australasia,* 24, 72-78. doi:10.1111/j.1742-6723.2011.01492.x

Foley, N. C., Martin, R. E., Salter, K. L., & Teasell, R. W. (2009). A review of the relationship between dysphagia and malnutrition following stroke. *Journal of Rehabilitation Medicine, 41*(9), 707-713. doi: https://doi.org/10.2340/16501977-0415

Foster, A., O'Halloran, R., Rose, M., & Worrall, L. (2016). "Communication is taking a back seat": speech pathologists' perceptions of aphasia management in acute hospital settings. *Aphasiology*, *30*(5), 585-608. doi: https://doi.org/10.1080/02687038.2014.985185

Foster, A., Worrall, L., Rose, M., & O'Halloran, R. (2015). 'That doesn't translate': the role of evidence-based practice in disempowering speech pathologists in acute aphasia management. *International Journal of Language and Communication Disorders, 50*(4), 547-563. doi: https://doi.org/10.1111/1460-6984.12155

Gillen, P., & Graffin, S. (2010). Nursing Delegation in the United Kingdom. *Online Journal of Issues in Nursing, 15*(2), 6-6. doi: 10.3912/OJIN.Vol15No02Man06

Giraldo-Cadavid, L. F., Leal-Leaño, L. R., Leon-Basantes, G. A., Bastidas, A. R., Garcia, R., Ovalle, S., & Abondano-Garavito, J. E. (2017). Accuracy of endoscopic and videofluoroscopic evaluations of swallowing for oropharyngeal dysphagia. *The Laryngoscope, 127*(9), 2002-2010. doi: https://doi.org/10.1002/lary.26419

Goldberg, L. R., Williams, P. S. & Paul-Brown, D. (2002a). Leading the Change Effort: I. Real and Perceived Challenges in Working with Speech-Language Pathology Assistants. *Communication Disorders Quarterly*, 23(4), 193–201. doi: https://doi.org/10.1177/15257401020230040401

Goldberg, L.R., Williams, P.S., & Paul-Brown, D. (2002b). Leading the Change Effort: II. Developing a Systematic Framework for the Inclusion of Speech-Language Pathology Assistants in Service Delivery. *Communication Disorders Quarterly, 24*(1), 5-9. doi: https://doi.org/10.1177/152574010202400102

González-Fernández, M., Huckabee, M. L., Doeltgen, S. H., Inamoto, Y., Kagaya, H., & Saitoh, E. (2013). Dysphagia rehabilitation: similarities and differences in three areas of the world. *Current Physical Medicine and Rehabilitation Reports, 1*(4), 296-306. doi: https://doi.org/10.1007/s40141-013-0035-9

Gravlin, G., & Phoenix Bittner, N. (2010). Nurses' and Nursing Assistants' Reports of Missed Care and Delegation. *JONA: The Journal of Nursing Administration, 40*(7/8), 329-335. doi: 10.1097/NNA.0b013e3181e9395e

Gunning, D., Wenke, R., Ward, E., Chalk, S., Lawrie, M., Romano, M., … Cardell, E. (2017). Clinicians' perceptions of delivering new models of high intensity aphasia treatment. *Aphasiology, 31*(4), 406-426. doi: https://doi.org/10.1080/02687038.2016.1236359

Guyomard, V., Fulcher, R. A., Redmayne, O., Metcalf, A. K., Potter, J. F., & Myint, P. K. (2009). Effect of dysphasia and dysphagia on inpatient mortality and hospital length of stay: a database study. *Journal of the American Geriatrics Society, 57*(11), 2101-2106. doi: https://doi.org/10.1111/j.1532-5415.2009.02526.x

Health Victoria. (2012). *Supervision and delegation framework for Allied Health Assistants.* Retrieved from www2.health.vic.gov.au/about/publications/policiesandguidelines/Supervision%20and%20delegation%20framework%20for%20allied%20health%20assistants

Hines, S., Kynoch, K., & Munday, J. (2016). Nursing interventions for identifying and managing acute dysphagia are effective for improving patient outcomes: a systematic review update. *Journal of Neuroscience Nursing, 48*(4), 215-223. doi: 10.1097/JNN.0000000000000200

Hines, S., Wallace, K., Crowe, L., Finlayson, K., Chang, A., & Pattie, M. (2011). Identification and nursing management of dysphagia in individuals with acute neurological impairment (update). *International Journal of Evidence-Based Healthcare, 9*(2), 148-150. doi: https://doi.org/10.1111/j.1744-1609.2011.00211.x

Hoskins, R. (2012). Interprofessional working or role substitution? A discussion of the emerging roles in emergency care. *Journal of Advanced Nursing, 68*(8), 1894-903. doi: https://doi.org/10.1111/j.1365-2648.2011.05867.x

Huhmann, T. M., Decker, O. R., Byham-Gray, O. L., Maillet, O. J., & Von Hagen, O. S. (2004). Comparison of dysphagia screening by a registered dietitian in acute stroke patients to speech language pathologist's evaluation. *Topics in Clinical Nutrition, 19*(3), 239-249. doi:10.1097/00008486-200407000-00008

IBM Corp. (2013). IBM SPSS Statistics for Windows. Version 22.0.

Jacobsson, C., Axelsson, K., Österlind, P. O., & Norberg, A. (2000). How people with stroke and healthy older people experience the eating process. *Journal of Clinical Nursing, 9*(2), 255-264. doi: https://doi.org/10.1046/j.1365-2702.2000.00355.x

Jiang, J.L., Fu, S.Y., Wang, W.H., & Ma, Y.C. (2016). Validity and reliability of swallowing screening tools used by nurses for dysphagia: A systematic review. *Tzu Chi Medical Journal, 28*(2), 41-48. doi: https://doi.org/10.1016/j.tcmj.2016.04.006

Kalisch, B., & Aebersold, M. (2006). Overcoming Barriers to Patient Safety. *Nursing Economics, 24*(3), 143-8. Retrieved from: https://search-proquest-com.ezproxy.library.uq.edu.au/docview/236936255?rfr_id=info%3Axri%2Fsid%3Aprimo

Katzan, I. L., Cebul, R. D., Husak, S. H., Dawson, N. V., & Baker, D. W. (2003). The effect of pneumonia on mortality among patients hospitalized for acute stroke. *Neurology, 60*(4), 620-625. doi: https://doi.org/10.1212/01.WNL.0000046586.38284.60

Kennedy, L. A., Ubido, J., Elhassan, S., Price, A., & Sephton, J. (1999). Dietetic helpers in the community: the Bolton community nutrition assistants project. *Journal of Human Nutrition and Dietetics, 12*(6), 501-512. doi: https://doi.org/10.1046/j.1365-277x.1999.00202.x

Kertscher, B., Speyer, R., Fong, E., Georgiou, A., & Smith, M. (2015). Prevalence of Oropharyngeal Dysphagia in the Netherlands: A Telephone Survey. *Dysphagia, 30*(2), 114-120. doi: https://doi.org/10.1007/s00455-014-9584-z

Kertscher, B., Speyer, R., Palmierei, M., & Plant, C. (2014). Bedside screening to detect oropharyngeal dysphagia in patients with neurological disorders: An updated systematic review. *Dysphagia, 29*(2), 204-212. doi: https://doi.org/10.1007/s00455-013-9490-9

Kim, H. M., Choi, K. H., & Kim, T. W. (2013). Patients' radiation dose during videofluoroscopic swallowing studies according to underlying characteristics. *Dysphagia, 28*(2), 153-158. doi: https://doi.org/10.1007/s00455-012-9424-y

Kim, K.H., Choi, K.H., Kim, H.M., Koo, J.H., Kim, B.R., Kim, T.W., … Park, J.W. (2012). Inter-rater Reliability of Videofluoroscopic Dysphagia Scale. *Annals of Rehabilitation Medicine, 36*(6), 791-796. doi: 10.5535/arm.2012.36.6.791

Kivimäki, M., Voutilainen, P., & Koskinen, P. (1995). Job enrichment, work motivation, and job satisfaction in hospital wards: testing the job characteristics model. *Journal of Nursing Management, 3*(2), 87-91. doi: https://doi.org/10.1111/j.1365-2834.1995.tb00086.x

Kuipers, P., Hurwood, A., & McBride, L. (2015). Audit of allied health assistant roles: Suggestions for improving quality in rural settings. *Australian Journal of Rural Health,* 23(3), 185-188. doi: 10.1111/ajr.12161

Labuschagne, A. (2003). Qualitative research: airy fairy or fundamental? *The Qualitative Report, 8*(1), 100-103. doi: https://nsuworks.nova.edu/tqr/vol8/iss1/7

Lai, S. M., Studenski, S., Duncan, P. W., & Perera, S. (2002). Persisting consequences of stroke measured by the Stroke Impact Scale. *Stroke, 33*(7), 1840-1844. doi: https://doi.org/10.1161/01.STR.0000019289.15440.F2

Lalor, E., & Cranfield, E. (2004). Aphasia: A description of the incidence and management in the acute hospital setting. *Asia Pacific Journal of Speech, Language and Hearing, 9*(2), 129-136. doi: https://doi.org/10.1179/136132804805575949

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33,* 159-174. doi: 10.2307/2529310

Langdon, P., Lee, A., & Binns, C. (2008). High incidence of respiratory infections in ‘nil by mouth tube-fed acute ischemic stroke patients. *Neuroepidemiology, 32*(2), 107-113. doi: 10.1159/000177036

Langmore, S. E. (2017). History of fiberoptic endoscopic evaluation of swallowing for evaluation and management of pharyngeal dysphagia: changes over the years. *Dysphagia, 32*(1), 27-38. doi: https://doi.org/10.1007/s00455-016-9775-x

Langmore, S.E. (2011). *Endoscopic evaluation and treatment of swallowing disorders*: New York: Thieme.

Langmore, S. E. (1999). Issues in the management of dysphagia. *Folia phoniatrica et logopaedica, 51*(4-5), 220-230. doi: https://doi.org/10.1159/000021499

Langmore, S. E., Kenneth, S. M., & Olsen, N. (1988). Fiberoptic endoscopic examination of swallowing safety: a new procedure. *Dysphagia, 2*(4), 216-219. doi: https://doi.org/10.1007/BF02414429

Langmore, S. E., Skarupski, K. A., Park, P. S., & Fries, B. E. (2002). Predictors of aspiration pneumonia in nursing home residents. *Dysphagia, 17*(4), 298-307. doi: https://doi.org/10.1007/s00455-002-0072-5

Lawrie, M. (1996). Communication management in the acute hospital setting: Lest we forget. *Australian Communication Quarterly*, 65-68.

Lazarus, C., Logemann, J. A., Song, C. W., Rademaker, A. W., & Kahrilas, P. J. (2002). Effects of voluntary maneuvers on tongue base function for swallowing. *Folia phoniatrica et logopaedica, 54*(4), 171-176. doi: https://doi.org/10.1159/000063192

Le Cornu, K. A., Halliday, D. A., Swift, L., Ferris, L. A., & Gatiss, G. A. (2010). The current and future role of the dietetic support worker. *Journal of Human Nutrition and Dietetics, 23*(3), 230-237. doi: https://doi.org/10.1111/j.1365-277X.2010.01055.x

Leder, S. B., & Suiter, D. M. (2014). *The Yale Swallow Protocol an Evidence-Based Approach to Decision Making* (1st ed. 2014). Switzerland: Springer International Publishing.

Leder, S. B., & Suiter, D. M. (2009). An epidemiologic study on aging and dysphagia in the acute care hospitalized population: 2000–2007. *Gerontology, 55*(6), 714-718. doi: https://doi.org/10.1159/000235824

Leder, S., Suiter, B., Agogo, D., & Cooney, M. (2016). An Epidemiologic Study on Ageing and Dysphagia in the Acute Care Geriatric-Hospitalized Population: A Replication and Continuation Study. *Dysphagia, 31*(5), 619-625. doi: https://doi.org/10.1007/s00455-016-9714-x

Leow, L., Huckabee, M. L., Anderson, T., & Beckert, L. (2010). The Impact of Dysphagia on Quality of Life in Ageing and Parkinson's Disease as Measured by the Swallowing Quality of Life (SWAL- QOL) Questionnaire. *Dysphagia, 25*(3), 216-220. doi: 10.1007/s00455-009-9245-9

Lizarondo, L., Kumar, S., Hyde, L., & Skidmore, D. (2010). Allied health assistants and what they do: a systematic review of the literature. *Journal of Multidisciplinary Healthcare, 3*, 143-153. doi: 10.2147/JMDH.S12106

Logemann, J. A. (1999). Behavioral management for oropharyngeal dysphagia. *Folia phoniatrica et logopaedica, 51*(4-5), 199-212. doi: https://doi.org/10.1159/000021497

Logemann, J. A. (1998). *Evaluation and treatment of swallowing disorders / Jeri A. Logemann* (2nd ed.). Austin, Texas: PRO-ED.

Logemann, J.A., Kahrilas, P., Kobara, M., & Vakil, N. (1989). The benefit of head rotation on pharyngoesophageal dysphagia. *Archives of Physical Medicine and Rehabilitation, 70*(10), 767-771. Retrieved from http://search.proquest.com/docview/79266666/

Logemann, J. A., & Larsen, K. (2012). Oropharyngeal dysphagia: pathophysiology and diagnosis for the anniversary issue of Diseases of the Esophagus. *Diseases of the Esophagus, 25*(4), 299-304. doi:10.1111/j.1442-2050.2011.01210.x

Logemann, J. A., & Pitts, L. L. (2013). Optimal outcomes for oropharyngeal dysphagia. *Current Physical Medicine and Rehabilitation Reports, 1*(4), 223-230. doi: https://doi.org/10.1007/s40141-013-0031-0

Mackey, H., & Nancarrow, S. (2005). Assistant practitioners: issues of accountability, delegation and competence. *International Journal of Therapy and Rehabilitation, 12*(8), 331-338. doi: https://doi.org/10.12968/ijtr.2005.12.8.19535

Manabe, T., Teramoto, S., Tamiya, N., Okochi, J., & Hizawa, N. (2015). Risk factors for aspiration pneumonia in older adults. *PloS one, 10*(10), e0140060. doi: https://doi.org/10.1371/journal.pone.0140060

Mangin, D., Sweeney, K., & Heath, I. (2007). Preventive health care in elderly people needs rethinking. *BMJ, 335*(7614), 285–287. doi: https://doi.org/10.1136/bmj.39241.630741.BE1

Mankekar, G. (2015). *Swallowing - Physiology, Disorders, Diagnosis and Therapy*. New Delhi, India: Springer.

Mari, F., Matei, M., Ceravolo, M. G., Pisani, A., Montesi, A., & Provinciali, L. (1997). Predictive value of clinical indices in detecting aspiration in patients with neurological disorders. *Journal of Neurology, Neurosurgery & Psychiatry, 63*(4), 456-460. doi: http://dx.doi.org/10.1136/jnnp.63.4.456

Martin-Harris, B., & Jones, B. (2008). The videofluorgraphic swallowing study. *Physical Medicine and Rehabilitation Clinics of North America, 19,* 769-785. doi: https://doi.org/10.1016/j.pmr.2008.06.004

Martin-Harris, B., Brodsky, M. B., Michel, Y., Ford, C. L., Walters, B., & Heffner, J. (2005). Breathing and swallowing dynamics across the adult lifespan. *Archives of Otolaryngology–Head & Neck Surgery, 131*(9), 762-770. doi: 10.1001/archotol.131.9.762

Martino, R., Flowers, H. L., Shaw, S. M., & Diamant, N. E. (2013). A systematic review of current clinical and instrumental swallowing assessment methods. *Current Physical Medicine and Rehabilitation Reports, 1*(4), 267-279. doi: https://doi.org/10.1007/s40141-013-0033-y

Martino, R., Pron, G., & Diamant, N. E. (2004). Oropharyngeal dysphagia: surveying practice patterns of the speech–language pathologist. *Dysphagia, 19*(3), 165-176. doi: https://doi.org/10.1007/s00455-004-0004-7

Martino, R., Pron, G., & Diamant, N. (2000). Screening for oropharyngeal dysphagia in stroke: insufficient evidence for guidelines. *Dysphagia, 15*(1), 19-30. doi: https://doi.org/10.1007/s004559910006

Martino, R., Silver, F., Teasell, R., Bayley, M., Nicholson, G., Streiner, D. L., & Diamant, N. E. (2009). The Toronto Bedside Swallowing Screening Test (TOR-BSST). *Stroke, 40*(2), 555-561. doi: https://doi.org/10.1161/STROKEAHA.107.510370

Mcallister, S., Kruger, S., Doeltgen, S., & Tyler-Boltrek, E. (2016). Implications of Variability in Clinical Bedside Swallowing Assessment Practices by Speech Language Pathologists. *Dysphagia, 31*(5), 650-662. doi: https://doi.org/10.1007/s00455-016-9724-8

McCartney, E., Boyle, J., Bannatyne, S., Jessiman, E., Campbell, C., Kelsey, C., … O'Hare, A. (2005). Thinking for two: A case study of speech and language therapists working through assistants. *International Journal of Language & Communication Disorders, 40*(2), 221-235. doi: https://doi.org/10.1080/13682820400016514

McCullough, G., Wertz, R., & Rosenbek, J. (2001). Sensitivity and specificity of clinical/bedside examination signs for detecting aspiration in adults subsequent to stroke. *Journal of Communication Disorders, 34*(1), 55-72. doi: https://doi.org/10.1016/S0021-9924(00)00041-1

McGrath, A., Reid, N., & Boore, J. (1989). Occupational stress in nursing. *International Journal of Nursing Studies, 26*(4), 343-358. doi: https://doi.org/10.1016/0020-7489(89)90020-5

McHorney, C. A., Robbins, J., Lomax, K., Rosenbek, J. C., Chignell, K., Kramer, A. E., & Earl Bricker, D. (2002). The SWAL–QOL and SWAL–CARE Outcomes Tool for Oropharyngeal Dysphagia in Adults: III. Documentation of Reliability and Validity. *Dysphagia*, *17*(2), 97–114. doi: https://doi.org/10.1007/s00455-001-0109-1

McHugh, M. L. (2012). Interrater reliability: the kappa statistic. *Biochemia medica*, *22*(3), 276-282. doi: https://doi.org/10.11613/BM.2012.031

McLaughlin, E., Lincoln, M., & Adamson, B. (2008). Speech-language pathologists' views on attrition from the profession. *International Journal of Speech-Language Pathology, 10*(3), 156-168. doi: https://doi.org/10.1080/17549500801923310

Meng, N. H., Wang, T. G., & Lien, I. N. (2000). Dysphagia in patients with brainstem stroke: incidence and outcome. *American Journal of Physical Medicine & Rehabilitation, 79*(2), 170-175. doi: https://doi.org/10.1097/00002060-200003000-00010

Miller, N., & Patterson, J. (2014). Dysphagia: implications for older people. *Reviews in Clinical Gerontology, 24*(01), 41-57. doi: https://doi.org/10.1017/S0959259808002463

Moloney, J., & Walshe, M. (2018). "I had no idea what a complicated business eating is…": A qualitative study of the impact of dysphagia during stroke recovery. *Disability and Rehabilitation, 40*(13), 1524-1531. doi: https://doi.org/10.1080/09638288.2017.1300948

Moran, A. M., Nancarrow, S. A., Wiseman, L., Maher, K., Boyce, R. A., Borthwick, A. M., & Murphy, K. (2012). Assisting role design: A qualitative evaluation of the implementation of a podiatry assistant role to a community health setting utilising a traineeship approach. *Journal of Foot and Ankle Research, 5*, 30. doi: https://doi.org/10.1186/1757-1146-5-30

Moran, A., Enderby, P., & Nancarrow, S. (2011). Defining and identifying common elements of and contextual influences on the roles of support workers in health and social care: A thematic analysis of the literature. *Journal of Evaluation in Clinical Practice, 17*(6), 1191-1199. doi: https://doi.org/10.1111/j.1365-2753.2010.01505.x

Moran, A., Nancarrow, S., & Enderby, P. (2015). Mechanisms to enhance the effectiveness of allied health and social care assistants in community-based rehabilitation services: A qualitative study. *Health & Social Care in the Community, 23*(4), 389-398. doi: https://doi.org/10.1111/hsc.12158

Moran, A., Nancarrow, S., Enderby, P., & Bradburn, M. (2012). Are we using support workers effectively? The relationship between patient and team characteristics and support

worker utilisation in older people's community- based rehabilitation services in England. *Health & Social Care in the Community*, *20*(5), 537-549. doi: https://doi.org/10.1111/j.1365-2524.2012.01065.x

Morishima, Y., Chida, K., & Watanabe, H. (2016). Estimation of the dose of radiation received by patient and physician during a videofluoroscopic swallowing study. *Dysphagia*, *31*(4), 574-578. doi: https://doi.org/10.1007/s00455-016-9718-6

Munn, Z., Tufanaru, C., & Aromataris, E. (2013). Recognition of the health assistant as a delegated clinical role and their inclusion in models of care: a systematic review and meta-synthesis of qualitative evidence. *International Journal of Evidence-Based Healthcare*, *11*(1), 3-19. doi: https://doi.org/10.1111/j.1744-1609.2012.00304.x

Munn, Z., Tufanaru, C., Aromataris, E., McBride, Liza., Molineux, M., & Pearson, A. (2014). Clinical education and training for AHAs: A narrative review. *Focus on Health Professional Education: A Multi-disciplinary Journal*, *15*(3), 81-93. Retrieved from https://search-informit.com.au.ezproxy.library.uq.edu.au/documentSummary;res=AEIPT;dn=201664

Mustaffa-Kamal, R. M., Ward, E., & Cornwell, P. (2012). Dysphagia management practices among speech-language pathologists in Malaysia. *Asia Pacific Journal of Speech, Language and Hearing*, *15*(2), 111-128. doi: https://doi.org/10.1179/jslh.2012.15.2.111

Nancarrow, S. (2015). Six principles to enhance health workforce flexibility. *Human Resources for Health, 13*(1), 9. doi: https://doi.org/10.1186/1478-4491-13-9

Nancarrow, S. A., Roots, A., Grace, S., Moran, A. M., & Vanniekerk-Lyons, K. (2013). Implementing large-scale workforce change: learning from 55 pilot sites of allied health

workforce redesign in Queensland, Australia. *Human Resources for Health, 11*(1), 66. doi: https://doi.org/10.1186/1478-4491-11-66

Nancarrow, S. A., Shuttleworth, P., Tongue, A., & Brown, L. (2005). Support workers in intermediate care. *Health & Social Care in the Community, 13*(4), 338-344. doi: https://doi.org/10.1111/j.1365-2524.2005.00563.x

Nancarrow, S., Moran, A., & Sullivan, R. (2014). Mechanisms for the effective implementation of an AHA trainee: A qualitative study of a speech language pathology assistant. *Australian Health Review*, 39(1), 101-108. doi: 101-108 https://doi.org/10.1071/AH14053

Nancarrow, S., Moran, A., Wiseman, L., Pighills, A., & Murphy, K. (2012). Assessing the implementation process and outcomes of newly introduced assistant roles: A qualitative study to examine the utility of the Calderdale Framework as an appraisal tool. *Journal of Multidisciplinary Healthcare, 5,* 307-17. doi: 10.2147/JMDH.S35493

National Council of State Boards of Nursing. (2016). National guidelines for nursing delegation. *Journal of Nursing Regulation, 7*(1), 5-14. doi: https://doi.org/10.1016/S2155-8256(16)31035-3

National Stroke Foundation. (2017). *Clinical Guidelines for Stroke Management 2017.* Retrieved from www.informe.org.au

New South Wales Health. (2013). *Allied Health Assistant framework.* Retrieved from www1.health.nsw.gov.au/pds/Active/PDSDocuments/GL2013_005.pdf

New Zealand Speech-Language Therapists' Association (2008). *The Speech Language Therapy Assistant Role.* Retrieved from https://speechtherapy.org.nz/wp-content/uploads/2013/09/SLTA-Position-Paper-December-2008.pdf

Neuman GA, Edwards JE, Raju NS. (1989). Organizational development interventions: A meta-analysis of their effects on satisfaction and other attitudes**.** *Personnel Psychology, 42***,** 461-483. doi: https://doi.org/10.1111/j.1744-6570.1989.tb00665.x

O'Brien, R., Byrne, N., Mitchell, R., & Ferguson, A. (2013). Rural speech-language pathologists' perceptions of working with AHAs. *International Journal of Speech-Language Pathology, 15*(6), 613-622. doi: https://doi.org/10.3109/17549507.2012.759623

Occupational Therapy Australia. (2015). *Position Paper: the role of Allied Health Assistants in supporting Occupational Therapy practice.* Retrieved from www.otaus.com.au/sitebuilder/advocacy/knowledge/asset/files/21/positionpaper-theroleofahasinsupportingoccupationaltherapypractice[october2015].pdf

Ofori-Asenso, R., Zomer, E., Curtis, A.J., Zoungas, S., & Gambhir, M. (2018). Measures of population ageing in Australia from 1950 to 2015. *Journal of Population Ageing, 11*(4), 367-385. doi: https://doi-org.ezproxy.library.uq.edu.au/10.1007/s12062-017-9203-5

Ostergren, J. (2012). Bachelor-Level Speech-Language Pathology Assistants in California: A clinical practicum course. *Contemporary Issues in Communication Sciences and Disorders, 39,* 1-11. Retrieved from http://search.proquest.com/docview/1558998736/

Ostergren, J., & Aguilar, S. (2015). Speech-Language Pathology Assistant Supervisor Survey. *Contemporary Issues in Communication Science and Disorders, 42*, 226-245. Retrieved from http://search.proquest.com/docview/1775173674/

Ostergren, J., & Aguilar, S. (2012). A Survey of Speech-Language Pathology Assistants (SLPAs) in California: Current Trends in Demographics, Employment, Supervision, and Training. *Contemporary Issues in Communication Science and Disorders, 39,* 121-136. Retrieved from http://search.proquest.com/docview/1558998684/

Palmer, J. B., Kuhlemeier, K. V., Tippett, D. C., & Lynch, C. (1993). A protocol for the videofluorographic swallowing study. *Dysphagia, 8*(3), 209-214. doi: https://doi.org/10.1007/BF01354540

Paranji, S., Paranji, N., Wright, S., & Chandra, S. (2017). A nationwide study of the impact of dysphagia on hospital outcomes among patients with dementia. *American Journal of Alzheimer's Disease & Other Dementias, 32*(1), 5-11. doi: https://doi.org/10.1177/1533317516673464

Patel, D. A., Krishnaswami, S., Steger, E., Conover, E., Vaezi, M. F., Ciucci, M. R., & Francis, D. O. (2018). Economic and survival burden of dysphagia among inpatients in the United States. *Diseases of the Esophagus, 31*(1), dox131. doi: https://doi.org/10.1093/dote/dox131

Paul-Brown, D. & Goldberg, L.R. (2001). Current Policies and New Directions for Speech-Language Pathology Assistants. *Language, Speech, and Hearing Services in Schools, 32*(1), 4–17. doi: https://doi.org/10.1044/0161-1461(2001/001)

Payne, R., De Wet, S., Sutton, K., & Warwick, H. (2010). Mealtime assistants pilot project. *Proceedings of the Nutrition Society, 69*, E182–E182. doi: 10.1017/S0029665109993788

Pearce, C., & Pagett, L. (2015). Advanced AHAs: An emerging workforce. *Australian Health Review, 39*(3), 260-263. doi: https://doi.org/10.1071/AH14253

Pelletier, C. A. (2004). What do certified nurse assistants actually know about dysphagia and feeding nursing home residents? *American Journal of Speech-Language Pathology, 13*(2), 99-113. doi: https://doi.org/10.1044/1058-0360(2004/012)

Perry, L., & Love, C. P. (2001). Screening for dysphagia and aspiration in acute stroke: a systematic review. *Dysphagia, 16*(1), 7-18. doi: https://doi.org/10.1007/PL00021290

Pikus, L., Levine, M. S., Yang, Y. X., Rubesin, S. E., Katzka, D. A., Laufer, I., & Gefter, W. B. (2003). Videofluoroscopic studies of swallowing dysfunction and the relative risk of pneumonia. *American Journal of Roentgenology, 180*(6), 1613-1616. doi: 10.2214/ajr.180.6.1801613

Plowman, E. K., Tabor, L. C., Robison, R., Gaziano, J., Dion, C., Watts, S. A., Vu, T., & Gooch, C. (2016). Discriminant ability of the Eating Assessment Tool 10 to detect aspiration in individuals with amyotrophic lateral sclerosis. *Neurogastroenterology & Motility, 28*(1), 85-90. doi: https://doi.org/10.1111/nmo.12700

Productivity Commission (2005). *Australia Health Workforce, Research Report, Canberra.* Retrieved from https://www.pc.gov.au/inquiries/completed/health-workforce/report.

Pullenayegum, S., Fielding, B., Du Plessis, E., & Peate, I. (2005). The value of the role of the rehabilitation assistant. *British Journal of Nursing, 14*(14), 778–784. doi: https://doi.org/10.12968/bjon.2005.14.14.18556

Queensland Government. (2014). *Ministerial Taskforce on health practitioner expanded scope of practice: final report.* Retrieved from https://www.health.qld.gov.au/ahwac/html/hpmintaskforce

Queensland Health. (2014). *Ministerial Taskforce: Expanded scope of practice.* Retrieved from https://www.health.qld.gov.au/ahwac/html/hpmintaskforce

Queensland Health. (2016). *Governance guidelines for allied health assistants.* Retrieved from www.health.qld.gov.au/ahwac/default.asp

Ramsey, D. J., Smithard, D. G., & Kalra, L. (2003). Early assessments of dysphagia and aspiration risk in acute stroke patients. *Stroke, 34*(5), 1252-1257. doi: https://doi.org/10.1161/01.STR.0000066309.06490.B8

Rangarathnam, B., & McCullough, G. (2016). Utility of a Clinical Swallowing Exam for Understanding Swallowing Physiology. *Dysphagia, 31*(4), 491-497. doi: 10.1007/s00455-016-9702-1.

Reza Shariatzadeh, M., Huang, J. Q., & Marrie, T. J. (2006). Differences in the features of aspiration pneumonia according to site of acquisition: community or continuing care facility. *Journal of the American Geriatrics Society, 54*(2), 296-302. doi: https://doi.org/10.1111/j.1532-5415.2005.00608.x

Rick, T., & Ballweg, R. (2017). Physician Assistants and the Expanding Global Health-Care Workforce. *The American Journal of Tropical Medicine and Hygiene, 97*(3), 643-644. doi: https://doi.org/10.4269/ajtmh.17-0176

Robbins, J., Kays, S. A., Gangnon, R. E., Hind, J. A., Hewitt, A. L., Gentry, L. R., & Taylor, A. J. (2007). The effects of lingual exercise in stroke patients with dysphagia. *Archives of Physical Medicine and Rehabilitation, 88*(2), 150-158. doi: https://doi.org/10.1016/j.apmr.2006.11.002

Robinson, J. H., Callister, L. C., Berry, J. A., & Dearing, K. A. (2008). Patient centered care and adherence: Definitions and applications to improve outcomes. *Journal of the American Association of Nurse Practitioners,* 20(12), 600-607. doi: https://doi.org/10.1111/j.1745-7599.2008.00360.x

Roden, D.F., & Altman, K.W. (2013). Causes of Dysphagia Among Different Age Groups: A Systematic Review of the Literature: A Systematic Review of the Literature. *Otolaryngologic Clinics of North America, 46*(6), 965-987. doi: https://doi.org/10.1016/j.otc.2013.08.008

Rofes, L., Arreola, V., Mukherjee, R., & Clave, P. (2014). Sensitivity and specificity of the Eating Assessment Tool and the Volume Viscosity Swallow Test for clinical evaluation of oropharyngeal dysphagia. *Neurogastroenterology & Motility*, *26*(9), 1256-1265. doi: https://doi.org/10.1111/nmo.12382

Rofes, L., Arreola, V., Romea, M., Palomera, E., Almirall, J., Cabré, M., … Clavé, P. (2010). Pathophysiology of oropharyngeal dysphagia in the frail elderly. *Neurogastroenterology & Motility*, *22*(8), 851. doi: https://doi.org/10.1111/j.1365-2982.2010.01521.x

Romano, M., Schultz, T., Tai, A., & White, S. (2014). The diagnostic test accuracy of clinical swallow assessment for oropharyngeal aspiration: a systematic review. *JBI Database of Systematic Reviews and Implementation Reports, 12*(8), 259-329. doi:10.11124/jbisrir-2014-1372

Rose, M., Ferguson, A., Power, E., Togher, L., & Worrall, L. (2014). Aphasia rehabilitation in Australia: Current practices, challenges and future directions. *International Journal of Speech-Language Pathology, 16*(2), 169-180. doi: https://doi.org/10.3109/17549507.2013.794474

Rosenbek, J. C., Robbins, J., Willford, W. O., Kirk, G., Schiltz, A., Sowell, T. W., … Fogarty, A (1998). Comparing treatment intensities of tactile-thermal application. *Dysphagia, 13*(1), 1-9. doi: https://doi.org/10.1007/PL00009542

Rosenvinge, S., & Starke, I. (2005). Improving care for patients with dysphagia. *Age and Ageing, 34*(6), 587-593. doi: https://doi.org/10.1093/ageing/afi187

Roy, N., Stemple, J., Merrill, R. M., & Thomas, L. (2007). Dysphagia in the elderly: preliminary evidence of prevalence, risk factors, and socioemotional effects. *Annals of Otology, Rhinology & Laryngology, 116*(11), 858-865. doi: https://doi.org/10.1177/000348940711601112

Royal College of Speech Language Therapists. (2003). *RCSLT Policy Statement, Education and training for Assistants.* Retrieved from https://www.rcslt.org/speech_and_language_therapy/rcslt_statement_v3

Rumbach, A., Coombes, C., & Doeltgen, S. (2017). A Survey of Australian Dysphagia Practice Patterns. *Dysphagia*, 1-11. doi: https://doi.org/10.1007/s00455-017-9849-4

Sarabia-Cobo, C.M., Pérez, V., De Lorena, P., Domínguez, E., Hermosilla, C., Nuñez, J., … Rodríguez, L. (2016). The incidence and prognostic implications of dysphagia in elderly patients institutionalized: A multicenter study in Spain. *Applied Nursing Research, 30*, 6-9. doi: https://doi.org/10.1016/j.apnr.2015.07.001

Saume, M., Panier, V., Lardinois, V., Kengni, J., Fayt, G., Lemaire, P., & Kennes, B. (2012). Dysphagia in geriatric hospital units: Prevalence and risks factors. *European Geriatric Medicine, 3,* S32. doi: 10.1016/j.eurger.2012.07.451

Schatz, K., Langmore, S. E., & Olson, N. (1991). Endoscopic and videofluoroscopic evaluations of swallowing and aspiration. *Annals of Otology, Rhinology & Laryngology, 100*(8), 678-681. doi: https://doi.org/10.1177/000348949110000815

Schmidt, D. (2013). Supervising allied health assistants: A concerning skill gap in allied health professionals. *Journal of Allied Health, 42*(4), 243-246.

Schmitz, C. (2010). Limesurvey [computer software].

Schoeppe, F., Sommer, W.H., Haack, M., Havel, M., Rheinwald, M., Wechtenbruch, J., … & Sommer, N.N. (2018). Structured reports of videofluoroscopic swallowing studies have the potential to improve overall report quality compared to free text reports. *European Radiology, 28*(1), 308-315. doi: https://doi.org/10.1007/s00330-017-4971-0

Schofield, D., & Earnest, A. (2006). Demographic change and the future demand for public hospital care in Australia, 2005 to 2050. *Australian Health Review, 30*(4), 507-515. doi: https://doi.org/10.1071/AH060507

Schwarz, M., Ward, E. C., Cornwell, P., Coccetti, A., & Kalapac, N. (2018). Evaluating the Feasibility and Validity of Using Trained Allied Health Assistants to Assist in Mealtime Monitoring of Dysphagic Patients. *Dysphagia*, 34(3), 350-359. doi: https://doi.org/10.1007/s00455-018-9947-y

Schwarz, M., Ward, E. C., Cornwell, P., Coccetti, A., D'Netto, P., Smith, A., & Morley-Davies, K. (unpublished manuscript). Exploring the validity and feasibility of using Allied Health Assistants to conduct dysphagia screening for low risk patients within the acute hospital setting.

Schwarz, M., Ward, E.C., Cornwell, P., & Coccetti, A. (2019). Delegation models in dysphagia management: Current policy, clinical perceptions and practice patterns. *International Journal of Speech-Language Pathology,* 1-11. doi: 10.1080/17549507.2019.1632932

Seabrook, M., Schwarz, M., Ward, E. C., & Whitfield, B. (2018). Implementation of an extended scope of practice speech-language pathology allied health practitioner service: An evaluation of service impacts and outcomes. *International Journal of Speech-Language Pathology*, *21*(1), 65-74. doi: https://doi.org/10.1080/17549507.2017.1380702

Serra-Prat, M., Palomera, M., Gomez, C., Sar-Shalom, D., Saiz, A., Montoya, J. G., … Clavé, P. (2012). Oropharyngeal dysphagia as a risk factor for malnutrition and lower respiratory tract infection in independently living older persons: a population-based prospective study. *Age and Ageing*, *41*(3), 376-381. doi: https://doi.org/10.1093/ageing/afs006

Shaker, R., Easterling, C., Kern, M., Nitschke, T., Massey, B., Daniels, S., … Dikeman, K. (2002). Rehabilitation of swallowing by exercise in tube-fed patients with pharyngeal dysphagia secondary to abnormal UES opening. *Gastroenterology, 122*(5), 1314-1321. doi: https://doi.org/10.1053/gast.2002.32999

Sharma, S., Ward, E. C., Burns, C., Theodoros, D., & Russell, T. (2012). Training the allied health assistant for the telerehabilitation assessment of dysphagia. *Journal of Telemedicine and Telecare, 18*(5), 287-291. doi: https://doi.org/10.1258/jtt.2012.111202

Silbergleit, A.K., Cook, D., Kienzle, S., Boettcher, E., Myers, D., Collins, D., … & Silbergleit, R. (2018). Impact of formal training on agreement of videofluoroscopic swallowing study interpretation across and within disciplines. *Abdominal Radiology, 43*(11), 2938-2944. doi: https://doi.org/10.1007/s00261-018-1587-z

Simmons, S. F., Keeler, E., Zhuo, X., Hickey, K. A., Sato, H. W., & Schnelle, J. F. (2008). Prevention of unintentional weight loss in nursing home residents: a controlled trial of feeding assistance. *Journal of the American Geriatrics Society, 56*(8), 1466-1473. doi: https://doi.org/10.1111/j.1532-5415.2008.01801.x

Simmons, S. F., & Schnelle, J. F. (2006). Feeding assistance needs of long-stay nursing home residents and staff time to provide care. *Journal of the American Geriatrics Society, 54*(6), 919-924. doi: https://doi.org/10.1111/j.1532-5415.2006.00812.x

Smith, H. A., Lee, S. H., O'Neill, P. A., & Connolly, M. J. (2000). The combination of bedside swallowing assessment and oxygen saturation monitoring of swallowing in acute stroke: a safe and humane screening tool. *Age and Ageing, 29*(6), 495-499. doi: https://doi.org/10.1093/ageing/29.6.495

Smith, R. & Duffy, J., 2010. Developing a competent and flexible workforce using the Calderdale Framework. *International Journal of Therapy and Rehabilitation, 17*(5), pp.254–259. doi: https://doi.org/10.12968/ijtr.2010.17.5.47844

Smith Hammond, C. A., & Goldstein, L. B. (2006). Cough and aspiration of food and liquids due to oral-pharyngeal dysphagia: ACCP evidence-based clinical practice guidelines. *Chest, 129*(1), 154S-168S. doi: https://doi.org/10.1378/chest.129.1_suppl.154S

Smithard, D. G. (2016). Dysphagia Management and Stroke Units. *Current Physical Medicine and Rehabilitation Reports, 4*(4), 287-294. doi: https://doi.org/10.1007/s40141-016-0137-2

Sochalski, J. (2001). Quality of care, nurse staffing, and patient outcomes. *Policy, Politics, & Nursing Practice, 2*(1), 9-18. doi: https://doi.org/10.1177/152715440100200103

Somerville, L. G., & Keating, A. (2012). The AHA project aimed to scope opportunities to introduce AHA positions into allied health teams across Alfred Health, develop implementation strategies to support these positions and pilot new and emerging AHA roles. Retrieved from www.health.viv.gov.au/workforce/reform/assistant.

Somerville, L., Davis, A., Elliott, A., Terrill, D., Austin, N., & Philip, K. (2015). Building allied health workforce capacity: A strategic approach to workforce innovation. *Australian Health Review, 39*(3), 264-270. doi: https://doi.org/10.1071/AH14211

Somerville, L., Davis, A., Milne, S., Terrill, D., & Philip, K. (2018). Exploration of an allied health workforce redesign model: Quantifying the work of AHAs in a community workforce. *Australian Health Review, 42,* 469-474. doi: https://doi.org/10.1071/AH16266

Sorensen, R.T., Rasmussen, R.S., Overgaard, K., Lerche, A., Johansen, A.M., & Lindhardt, T. (2013). Dysphagia screening and intensified oral hygiene reduce pneumonia after

stroke. (Report). *Journal of Neuroscience Nursing, 45*(3), 139-146. doi: 10.1097/JNN.0b013e31828a412c

Speech Pathology Australia (2019). *Position Statement- Fibreoptic Endoscopic Evaluation of Swallowing.* Retrieved from www.speechpathologyaustralia.org.au/

Speech Pathology Australia. (2014). *Position Statement – Working with support workers.* Retrieved from www.speechpathologyaustralia.org.au/

Speech Pathology Australia. (2009). *Credentialing: general position paper.* Retrieved from www.speechpathologyaustralia.org.au/

Speech Pathology Australia. (2005). *Productivity commission health workforce study: Speech Pathology Australia response. Melbourne, Speech Pathology Australia*.

Speech Pathology Australia. (2004). *Dysphagia: general position paper.* Retrieved from www.speechpathologyaustralia.org.au/

Speyer, R. (2012). Behavioural Treatment of Oropharyngeal Dysphagia: Bolus Modification and Management, Sensory and Motor Behavioural Techniques, Postural Adjustments, and Swallow Manoeuvres. In O. Ekberg (Ed.), *Dysphagia: Diagnosis and Treatment* (pp. 477-491). Berlin, Heidelberg: Springer Berlin Heidelberg.

Speyer, R. (2013). Oropharyngeal dysphagia: screening and assessment. *Otolaryngologic Clinics of North America, 46*(6), 989-1008. doi: https://doi.org/10.1016/j.otc.2013.08.004

Stanhope, J., & Pearce, C. (2013). Role, implementation, and effectiveness of advanced allied health assistants: A systematic review. *Journal of Multidisciplinary Healthcare, 6,* 423-34. doi: 10.2147/JMDH.S50185

Stanmore, E., & Waterman, H. (2007). Crossing professional and organizational boundaries: the implementation of generic rehabilitation assistants within three organizations in

the northwest of England. *Disability and Rehabilitation, 29*(9), 751-759. doi: https://doi.org/10.1080/09638280600902836

Steele, C. M., Greenwood, C., Ens, I., Robertson, C., & Seidman-Carlson, R. (1997). Mealtime difficulties in a home for the aged: not just dysphagia. *Dysphagia*, *12*(1), 43-50. doi: https://doi.org/10.1007/PL00009517

Steidl, E., Ribeiro, C., Gonçalves, B., Fernandes, N., Antunes, V., & Mancopes, R. (2015). Relationship between Dysphagia and Exacerbations in Chronic Obstructive Pulmonary Disease: A Literature Review. *International Archives of Otorhinolaryngology, 19*(01), 074-079. doi: 10.1055/s-0034-1376430

Stute, M., Hurwood, A., Hulcombe, J., & Kuipers, P. (2014). Pilot implementation of AHA roles within publicly funded health services in Queensland, Australia: Results of a workplace audit. *BMC Health Services Research, 14*(1). doi: https://doi.org/10.1186/1472-6963-14-258

Stute, M., Hurwood, A., Hulcombe, J., & Kuipers, P. (2013). Defining the role and scope of practice of AHAs within Queensland public health services. *Australian Health Review, 37*(5), 602-606. doi: https://doi.org/10.1071/AH13042

Suiter, D. M., & Leder, S. B. (2008). Clinical utility of the 3-ounce water swallow test. *Dysphagia, 23*(3), 244-250. doi: https://doi.org/10.1007/s00455-007-9127-y

Suiter, D., Sloggy, M., & Leder, J. (2014). Validation of the Yale Swallow Protocol: A Prospective Double-Blinded Videofluoroscopic Study. *Dysphagia*, 29(2), 199-203. doi: https://doi.org/10.1007/s00455-013-9488-3

Tanner, D., & Culbertson, W. (2014). Avoiding Negative Dysphagia Outcomes. *Online Journal of Issues in Nursing, 19*(2), 6. doi: 10.3912/OJIN.Vol19No02PPT03

Terpenning, M. S., Taylor, G. W., Lopatin, D. E., Kerr, C. K., Dominguez, B. L., & Loesche, W. J. (2001). Aspiration pneumonia: dental and oral risk factors in an older veteran population. *Journal of the American Geriatrics Society, 49*(5), 557-563. doi: https://doi.org/10.1046/j.1532-5415.2001.49113.x

Thomas, D. R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation, 27*(2), 237-246. doi: https://doi.org/10.1177/1098214005283748

Titsworth, W. L., Abram, J., Fullerton, A., Hester, J., Guin, P., Waters, M. F., & Mocco, J. (2013). Prospective quality initiative to maximize dysphagia screening reduces hospital-acquired pneumonia prevalence in patients with stroke. *Stroke, 44*(11), 3154-3160. doi: https://doi.org/10.1161/STROKEAHA.111.000204

Trapl, M., Enderle, P., Nowotny, M., Teuschl, Y., Matz, K., Dachenhausen, A., & Brainin, M. (2007). Dysphagia bedside screening for acute-stroke patients. *Stroke, 38*(11), 2948-2952. doi: 10.1161/STROKEAHA.107.483933

Tredinnick, G., & Cocks, N. (2014). Effectiveness of dysphagia training for adult learning disabilities support workers. *British Journal of Learning Disabilities, 42*(2), 125-132. doi: https://doi.org/10.1111/bld.12018

Ueda, K., Yamada, Y., Toyosato, A., Nomura, S., & Saitho, E. (2004). Effects of functional training of dysphagia to prevent pneumonia for patients on tube feeding. *Gerodontology, 21*(2), 108-111. doi: https://doi.org/10.1111/j.1741-2358.2004.00016.x

Van der Maarel-Wierink, C. D., Vanobbergen, J. N., Bronkhorst, E. M., Schols, J. M., & de Baat, C. (2011). Risk factors for aspiration pneumonia in frail older people: a systematic

literature review. *Journal of the American Medical Directors Association, 12*(5), 344-354. doi: https://doi.org/10.1016/j.jamda.2010.12.099

Van Oostveen, C. J., Mathijssen, E., & Vermeulen, H. (2015). Nurse staffing issues are just the tip of the iceberg: A qualitative study about nurses' perceptions of nurse staffing. *International Journal of Nursing Studies, 52*(8), 1300-1309. doi: https://doi.org/10.1016/j.ijnurstu.2015.04.002

Wagner, E. A. (2018). Improving patient care outcomes through better delegation – Communication between nurses and assistive personnel. *Journal of Nursing Care Quality, 33*, 187-193. doi: 10.1097/NCQ.0000000000000282

Walker, R. W., Dunn, J. R., & Gray, W. K. (2011). Self-reported dysphagia and its correlates within a prevalent population of people with Parkinson's disease. *Dysphagia, 26*(1), 92-96. doi: https://doi.org/10.1007/s00455-010-9317-x

Ward, E.C., Bishop, B., Frisby, J., & Stevens, M. (2002). Swallowing outcomes following laryngectomy and pharyngolaryngectomy. *Archives of Otolaryngology–Head & Neck Surgery, 128*(2), 181-186. doi: 10.1001/archotol.128.2.181

Ward, E. C., & Burns, C. L. (2014). Dysphagia management via telerehabilitation: A review of the current evidence. *Journal of Gastroenterology and Hepatology Research*, *3*(5), 1088-1094. Retrieved from http://www.ghrnet.org/index.php/joghr/article/view/699/815

Ward, E., Burns, C., Theodoros, D., & Russell, T. (2014). Impact of Dysphagia Severity on Clinical Decision Making via Telerehabilitation. *Telemedicine and E-Health, 20*(4), 296-303. doi: https://doi.org/10.1089/tmj.2013.0198

Ward, E.C., Sharma, C., Burns, S., Theodoros, C., & Russell, D. (2012a). Validity of Conducting Clinical Dysphagia Assessments for Patients with Normal to Mild Cognitive

Impairment via Telerehabilitation. *Dysphagia, 27*(4), 460-472. doi: https://doi.org/10.1007/s00455-011-9390-9

Ward, E.C., Sharma, S., Burns, C., Theodoros, D., & Russell, T. (2012b). Managing Patient Factors in the Assessment of Swallowing via Telerehabilitation. *International Journal of Telemedicine and Applications, 6.* doi: 10.1155/2012/132719

Wenke, R., Lawrie, M., Hobson, T., Comben, W., Romano, M., Ward, E., & Cardell, E. (2014). Feasibility and cost analysis of implementing high intensity aphasia clinics within a sub-acute setting. *International Journal of Speech-Language Pathology, 16*(3), 250-259. doi: https://doi.org/10.3109/17549507.2014.887777

Westergren, A., Hallberg, I. R., & Ohlsson, O. (1999). Nursing assessment of dysphagia among patients with stroke. *Scandinavian Journal of Caring Sciences, 13*(4), 274-282. doi: https://doi.org/10.1111/j.1471-6712.1999.tb00551.x

Westergren, A., Ohlsson, O., & Hallberg, I. R. (2001). Eating difficulties, complications and nursing interventions during a period of three months after a stroke. *Journal of Advanced Nursing, 35*(3), 416-426. doi: https://doi.org/10.1046/j.1365-2648.2001.01884.x

Westergren, A., Unosson, M., Ohlsson, O., Lorefält, B., & Hallberg, I.R. (2002). Eating difficulties, assisted eating and nutritional status in elderly (>65 years) patients in hospital rehabilitation. *International Journal of Nursing Studies, 39*(3), 341-351. doi: https://doi.org/10.1016/S0020-7489(01)00025-6

Western Australia Country Health Service (2009). *AHA program: delegation monitoring and evaluation of AHAs*. Retrieved from http://www.wacountry.health.wa.gov.au/fileadmin/sections/allied_health/WACHS_R_AHA_DelegationMonitoringEvaluation.pdf

Westmark, S., Melgaard, D., Rethmeier, L., & Ehlers, L. (2018). The cost of dysphagia in geriatric patients. *Clinco Economics & Outcomes Research, 10,* 321-326. doi: 10.2147/CEOR.S165713

Wood, A., Schuurs, S., & Amsters, D. (2011). Evaluating new roles for the support workforce in community rehabilitation settings in Queensland. *Australian Health Review, 35*(1), 86-91. doi: https://doi.org/10.1071/AH10880

Yoon, J., Kim, M., & Shin, J. (2016). Confidence in delegation and leadership of registered nurses in long-term-care hospitals. *Journal of Nursing Management, 24*(5), 676-685. doi: https://doi.org/10.1111/jonm.12372

Young, G., Hulcombe, J., Hurwood, A., & Nancarrow, S. (2015). The Queensland Health Ministerial Taskforce on health practitioners' expanded scope of practice: consultation findings. *Australian Health Review*, *39*(3), 249-254. doi: https://doi.org/10.1071/AH14141

Zhang, W., & Creswell, J. (2013). The Use of "Mixing" Procedure of Mixed Methods in Health Services Research. *Medical Care, 51*(8), e51-e57. doi:10.1097/MLR/0b013e3182

8 Appendix

8.1 Ethics approval- Griffith University – Chapter 2

Griffith UNIVERSITY

Office for Research

Nathan Campus
Griffith University
Queensland 4222
Australia

Telephone +61 (07) 3735 4375
Facsimile +61 (07) 3735 7994

www.griffith.edu.au

To Whom It May Concern

Human Research Ethics Approval
"Survey of current utilisation and barriers to utilisation of Allied Health Assistants (AHAs) in speech pathology"
(Ref: 2017/086)

I am pleased to advise that this research has approval to commence from the Griffith University Human Research Ethics Committee, a committee established and operating in accordance with the standards and principles of the Australian National Statement on Ethical Conduct in Human Research (2007) and Griffith University policy.

The decision to approve is dated 17 February 2017 and covers the period 17 February 2017 to 1 February 2019.

For any queries regarding this ethical approval please contact the Committee Secretary on tel: 07 3735 4375 or research-ethics@griffith.edu.au.

Yours sincerely,

Rick Williams
Secretary to the Griffith University
Human Research Ethics Committee and
Manager, Research Ethics and Integrity
Office for Research
Griffith University
Nathan Qld 4111 Australia

9 March 2018

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

Human Ethics Research Office

Cumbrae-Stewart Building #72
The University of Queensland
St Lucia, QLD 4072

CRICOS PROVIDER NUMBER 00025B

8 March 2017

Ms Maria Schwarz
School of Allied Health Sciences, Griffith University; School of Rehabilitation Sciences, University of Queensland

Dear Ms Schwarz,

Clearance Number: 2017000270 / 2017/086
Project Title: "Survey of current utilisation and barriers to utilisation of Allied Health Assistants (AHAs) in speech pathology"

Following administrative review of the human research ethics approval from Griffith University Human Research Ethics Committee, I am pleased to advise that, as the University of Queensland's authorised delegate for the University of Queensland's Human Research Ethics Committees A & B, approval is granted for this project.

The approved documents include:

Document	Version	Date
Griffith University HREC approval		17/02/2017
Letter in response to HREC comments		
Griffith Expedited Ethical Review Checklist		
LIMESURVEY draft		
Study Protocol	2	

This project has been approved to 17th February 2018.

We would like to take this opportunity to remind you that, should any modifications be made to this project, they will need to be approved by the lead human research ethics committee prior to being forwarded to the University of Queensland's human ethics office for administrative review and approval.

Please keep a copy of this document for your records.

Yours sincerely,

Address. Human Research Ethics Office | Cumbrae-Stewart Building #72, The University of Queensland, St Lucia, QLD 4072 | E humanethics@research.uq.edu.au W www.uq.edu.au/research/integrity-compliance/human-ethics

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

Human Ethics Research Office

Cumbrae-Stewart Building #72
The University of Queensland
St Lucia, QLD 4072

CRICOS PROVIDER NUMBER 00025B

Nicole Shively

Nicole Shively
Deputy Director, Research Management Office
Research Ethics Operations
The University of Queensland

8.2 Ethics approval- Metro South Hospital & Health Service HREC- Chapter 3

Metro South Health

Enquiries to: Metro South
Human Research Ethics Committee
Phone: 07 3443 8049
Fax: 07 3443 8003
HREC Ref: HREC/14/QPAH/509
E-mail: Ethicsresearch.pah@health.qld.gov.au

Ms Naomi Kalapac
Senior Speech Pathologist
Logan Hospital
P O Box 4096
Loganholme Qld 4129

Dear Ms Kalapac

HREC Reference number: HREC/14/QPAH/509
Project Title: Allied Health Assistants as an adjunct to Speech Pathology Assessment in Dysphagia Management of Adult Acute Inpatients

Thank you for submitting the above research protocol to the Metro South Human Research Ethics Committee for ethical and scientific review. This protocol was first considered by the Human Research Ethics Committee (HREC) at the meeting held on 7 October 2014.

You are reminded that this letter constitutes ethical approval only. You must not commence this research protocol at a site until separate authorisation from the Metro South Chief Executive or Delegate of that site has been obtained.

A copy of this approval must be submitted to the Research Governance Office(r)/Delegate of the relevant institution with a completed Site Specific Assessment (SSA) Form for authorisation from the Chief Executive or Delegate to conduct this research at the Logan Hospital.

I am pleased to advise that the HREC has granted approval of this research protocol. The documents reviewed and approved include:

Document	Version	Date
MSF31 Metro South HREC Submission Checklist Form		
NEAF		29 October 2014
Study Protocol	1	5 August 2014
Participant Information and Consent Form – Speech Pathologist	1	5 August 2014
Participant Information and Consent Form – Allied Health Assistant	2	29 October 2014
Participant Information and Consent Form – Patient	2	29 October 2014
Email recruitment – Speech Pathologist and Allied Health Assistant	1	13 August 2014
Allied Health Assistant Job Description		
Letter in response to HREC comments		n.d.

This HREC approval is valid from 4 November 2014 until 4 November 2017.

Please note the following conditions of approval:

1. The Principal Investigator will immediately report anything which might warrant review of ethical approval of the protocol in the specified format, including unforeseen events that might affect continued ethical acceptability of the protocol. Serious Adverse Events must be notified to the HREC as soon as possible.

The Metro South HREC wishes you every success in your research.

Yours sincerely,

A/Prof Richard Roylance
Chair
Metro South Hospital and Health Service
Human Research Ethics Committee (EC00167)
Centres for Health Research
Princess Alexandra Hospital

Cc: Ms M Schwarz, Logan Hospital

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

Human Ethics Research Office

Cumbrae-Stewart Building #72
The University of Queensland
St Lucia, QLD 4072

CRICOS PROVIDER NUMBER 00025B

29 June 2017

Ms Naomi Kalapac, Ms Maria Schwarz, Mrs Anne Coccetti
Logan Hospital

Dear Ms Schwarz,

Clearance Number: 2017000290 / HREC/14/QPAH/509
Project Title: "Allied Health Assistants as an adjunct to Speech Pathology Assessment in Dysphagia Management of Adult Acute Inpatients"

Following administrative review of the human research ethics approval from Metro South Health Human Research Ethics Committee, I am pleased to advise that, as the University of Queensland's authorised delegate for the University of Queensland's Human Research Ethics Committees A & B, approval is granted for this project.

The approved documents include:

Document	Version	Date
Metro South Health HREC Approval Form		**04/11/2014**
MSF31 Metro South HREC Submission Checklist Form		
NEAF		
Study Protocol	1	05/08/2014
Participant Information and Consent Form - Speech Pathologist	1	05/08/2014
Participant Information and Consent Form - Allied Health Assistant	2	29/10/2014
Participant Information and Consent - Patient	2	29/10/2014
Email recruitment - Speech Pathologist and Allied Health Assistant	1	13/08/2014
Allied Health Assistant Job Description		
Letter in response to HREC comments		
Metro South Health HREC AM01 Approval Form		**25/02/2015**

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

Human Ethics Research Office

Cumbrae-Stewart Building #72
The University of Queensland
St Lucia, QLD 4072

CRICOS PROVIDER NUMBER 00025B

Notification of Amendment Meal time observation demographic questionnaire Meal time observation pass/fail criteria Logan Hospital Mealtime Observation Form	3.0	March 2013
Metro South Health HREC AM02 Approval Form Notification of Amendment / MSF49 in respect to request for extension of ethical clearance until 1 January 2019; and inclusion of Dr Petrea Cornwell as an associate investigator		**29/11/2016** 15/11/2016

This project has been approved to 1st January 2019.

We would like to take this opportunity to remind you that, should any modifications be made to this project, they will need to be approved by the lead human research ethics committee prior to being forwarded to the University of Queensland's human ethics office for administrative review and approval.

Please keep a copy of this document for your records.

Yours truly,

Nicole Shively

Nicole Shively
Director, Research Ethics
Office of Research Ethics
The University of Queensland

8.3 Ethics approval- Metro South Hospital & Health Service- Chapter 4 and 5

Metro South Health

Enquiries to: Metro South
Human Research Ethics Committee
Phone: 07 3443 8049
Fax: 07 3443 8003
HREC Ref: HREC/15/QPAH/486
E-mail: EthicsResearch.PAH@health.qld.gov.au

Mrs A Coccetti
Director of Speech Pathology
Logan Hospital
Corner of Armstrong and Loganlea Roads
Meadowbrook Qld 4131

Dear Mrs Coccetti

HREC Reference number: HREC/15/QPAH/486
Project Title: The use of Allied Health Assistants to complete Dysphagia Screening in an Acute Hospital setting

Thank you for submitting the above research protocol to the Metro South Human Research Ethics Committee for ethical and scientific review, on behalf of the following Principal Investigators (see appendix). This protocol was first considered by the Human Research Ethics Committee (HREC) at the meeting held on 1 September 2015.

I am pleased to advise that the HREC has granted approval of this research protocol.

You are reminded that this letter constitutes ethical approval only. You must not commence this research protocol at a site until separate authorisation from the Metro South Chief Executive or Delegate of that site has been obtained.

A copy of this approval must be submitted to the Research Governance Office(r)/Delegate of the relevant institution with a completed Site Specific Assessment (SSA) Form for authorisation from the Chief Executive or Delegate to conduct this research at the sites listed in the Appendix below.

If this study currently receives grant funding, please remember to forward a copy of this approval letter to the relevant Grants Office of the Administering Institution(s) for the grant.

The documents reviewed and approved include:

Document	Version	Date
Cover letter		23 July 2015
NEAF (AU/1/89D1210)		13 October 2015
Study Protocol	1	3 June 2015
Participant Information Form – Allied Health Assistant – Logan Hospital	2	13 October 2015
Master Participant Information Form	3	13 October 2015
Master Participant Information Form – Allied Health	2	13 October 2015
Master Participant Information Form – Speech Pathologist	2	13 October 2015
Data Collection Tool – Phase 1	1	23 July 2015
Data Collection Tool – Phase 2	1	23 July 2015
Letter in response to HREC comments		n.d.

This HREC approval is valid from 27 October 2015 until 27 October 2018.

Please note the following conditions of approval:

1. The Coordinating Principal Investigator will immediately report anything which might warrant review of ethical approval of the protocol in the specified format, including unforeseen events that might affect continued ethical acceptability of the protocol. Serious Adverse Events must be notified to the HREC as soon as possible. In addition the Investigator must provide a summary of the adverse events, in the specified format, including a comment as to suspected causality and whether changes are required to the Patient Information and Consent Form. In the case of Serious Adverse Events occurring at the local site, a full report is required from the Coordinating Principal Investigator, including duration of treatment and outcome of the event.
2. Amendments to the research protocol which may affect the ongoing ethical acceptability of a protocol must be submitted to the HREC for review. Amendments should be accompanied by all relevant updated documentation and a cover letter from the Coordinating Principal Investigator, providing a brief description of the changes, the rationale for the changes, and their implications for the ongoing conduct of the study. Hard copies of the cover letter and all relevant updated documents, with *tracked changes*, must also be submitted to the HREC office as per standard HREC SOP. (Further advice on submitting amendments is available at http://www.health.qld.gov.au/ohmr/documents/researcher_userguide.pdf http://www.health.qld.gov.au/pahospital/research/amendments.asp
3. Amendments to the research protocol which only affect the ongoing site acceptability of the protocol are not required to be submitted to the HREC for review. These amendment requests should be submitted directly to the Research Governance Office/r.
4. Proposed amendments to the research protocol which may affect both the ethical acceptability and site suitability of the protocol must be submitted firstly to the HREC for review and, once HREC approval has been granted, then submitted to the Research Governance Office/r.
5. Amendments which do not affect either the ethical acceptability or site acceptability of the protocol (e.g. typographical errors) should be submitted electronically (track changes) and in hard copy (final clean copy) to the HREC Coordinator. These should include a cover letter from the Coordinating Principal Investigator providing a brief description of the changes and the rationale for the changes, and accompanied by all relevant updated documents with tracked changes.
6. The HREC will be notified, giving reasons, if the protocol is discontinued at a site before the expected date of completion.
7. The Coordinating Principal Investigator will provide an annual report to the HREC and at completion of the study in the specified format.
8. If you require an extension for your study, please submit a request for an extension in writing outlining the reasons. Note: One of the criteria for granting an extension is the compliance with the approval's conditions including submission of progress reports.
9. Any research study that prospectively assigns human participants or groups of humans to one or more health-related interventions to evaluate the effects on health outcomes (WHO / ICMJE 2008 definition) should be registered, including early phase and late phase clinical trials (phases I-III) in patients or healthy volunteers (WHO Recommendation / ICMJE policy). If in doubt, registration is recommended. All studies must be registered prior to the study's inception, i.e. prospectively. http://www.anzctr.org.au/

Should you have any queries about the HREC's consideration of your protocol please contact the Metro South HREC Office on 07 3443 8049

Please note that the Metro South HREC is constituted and operates in accordance with the National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research (2007), NHMRC and Universities Australia Australian Code for the Responsible Conduct of Research (2007)* and the *CPMP/ICH Note for Guidance on Good Clinical Practice*. .

The HREC Terms of Reference, Standard Operating Procedures, membership and standard forms are available from the following websites:
http://www.health.qld.gov.au/pahospital/research/gov/default.asp
http://www.health.qld.gov.au/ohmr/html/regu/regu_home.asp

Once authorisation to conduct the research has been granted, please complete the Commencement Form (Attached) and return to the Metro South Human Research Ethics Committee.

The Metro South HREC wishes you every success in your research.

Yours sincerely,

A/Prof Scott Campbell
Deputy Chair
Metro South Hospital and Health Service
Human Research Ethics Committee (EC00167)
Centres for Health Research
Princess Alexandra Hospital

27 / 10 / 15

C.c. Ms Maria Schwarz

Appendix:

List of Sites Approved

No.	Sites
1.	Logan Hospital
2.	Beaudesert Hospital
3.	Nambour Hospital
4.	Maryborough Hospital

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

Human Ethics Research Office

Cumbrae-Stewart Building #72
The University of Queensland
St Lucia, QLD 4072

CRICOS PROVIDER NUMBER 00025B

29 June 2017

Ms Maria Schwarz, Mrs Anna Coccetti, Ms Robyn Saxon, Ms Aimee Smith, Ms Pranika Lal
Logan Hospital; Nambour General Hospital, Maryborough Base Hospital, Beaudesert Hospital

Dear Ms Schwarz,

Clearance Number: 2017000269 / HREC/15/QPAH/486
Project Title: "The use of Allied Health Assistants to complete Dysphagia Screening in an Acute Hospital setting"

Following administrative review of the human research ethics approval from Metro South Health Human Research Ethics Committee, I am pleased to advise that, as the University of Queensland's authorised delegate for the University of Queensland's Human Research Ethics Committees A & B, approval is granted for this project.

The approved documents include:

Document	Version	Date
Metro South Health HREC approval letter		27/10/2015
Cover letter		23/07/2015
NEAF	AU/1/89D1210	13/10/2015
Study Protocol	v1	03/06/2015
Participant Information Form - Allied Health Assistant - Logan Hospital	v2	13/10/2015
Master Participant Information Form	v3	13/10/2015
Master Participant Information Form - Allied Health	v2	13/10/2015
Master Participant Information Form - Speech Pathologist	v2	13/10/2015
Data Collection Tool - Phase 1	v1	23/07/2015
Data Collection Tool - Phase 2	v1	23/07/2015
Letter in response to HREC comments		no date

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

Human Ethics Research Office

Cumbrae-Stewart Building #72
The University of Queensland
St Lucia, QLD 4072

CRICOS PROVIDER NUMBER 00025B

Metro South Health Amendment Approval for the addition of Ms Sallyanne Scudamore and Ms Pamela DNetto to the study		02/02/2016
Notification of Amendment / MSF49 Form		01/02/2016
Metro South Health Amendment Approval for change of screening tool to Yale Swallow Protocol		23/02/2016
Notification of Amendment / MSF49 Form		08/02/2016
Yalw Swallow Protocol		
Metro South Health Amendment Approval for the addition of Dr Petrea Cornwell to the study		29/11/2016
Notification of Amendment / MSF49 Form		15/11/2016
Metro South Health Amendment Approval for the addition of: Mealtime Observation removed as an dysphagia screening tool; EAT-10 and modified Yale screening tools only to be used now		10/03/2017
Notification of Amendment		07/03/2017

This project has been approved to 27th October 2018.

We would like to take this opportunity to remind you that, should any modifications be made to this project, they will need to be approved by the lead human research ethics committee prior to being forwarded to the University of Queensland's human ethics office for administrative review and approval.

Please keep a copy of this document for your records.

Yours truly,

Nicole Shively

Nicole Shively
Director, Research Ethics
Office of Research Ethics
The University of Queensland

8.4 Manger Survey- Chapter 2

(distributed electronically – content re-formatted for publication)

Eligibility to participate

- 1A. Are you the manager or director of a speech pathology department? (a: yes, b: no)
- 1B. Do you work in a hospital setting, providing ADULT speech pathology services, within a health service of Australia? (a: yes, b: no)
- 1C. Do you consent to participate in the research project outlined above by completing this short electronic survey? (a: yes, b: no)

Demographic information

- 2A. Please select the descriptors that best fit your speech pathology service (a: Tertiary/Quaternary, b: Primary/Community Hospital, c: Metropolitan, d: Regional Rural/Remote, e: Other)
- 2B. How many full time equivalent (FTE) do you have dedicated to speech pathology positions within your service?
- 2C. Describe the nature of the speech pathology services offered at your site (a: Inpatient- Acute, b: Inpatient- Rehabilitation, c: Outpatient- Rehabilitation, d: Outpatient- General Service, e: Outpatient- Instrumental Clinic, f: Inpatient- Instrumental Clinic, g: Other)
- 2D. What state/territory are you located in? (a: Australian Capital Territory, b: New South Wales, c: Northern Territory, d: Queensland, e: South Australia, f: Tasmania, g: Victoria, h. Western Australia)

Current AHA utilisation

- 3A. Do you currently use Allied Health Assistant (AHA) delegation to support speech pathology services? (a: yes, b: no)
- 4A. Would you like to use AHA delegation to support speech pathology services? (a: yes, b: no)
- 4B. Please select in which areas you would like to use AHA delegation to support speech pathology services (if not currently delegating) (a. Administrative support, b: Language, c: Motor Speech, d: Dysphagia, e: Fluency, f: Voice, g: Multi-modal/AAC, h: Other)

AHA information- general and training

- 5A. How many AHAs are currently available within your speech pathology service?
- 5B. Do you have a designated speech pathology specific AHA? (a. Yes- we have a designated AHA for speech pathology, b. No, our AHA works across multiple disciplines including speech pathology, c. We have a mix of AHA- some dedicated to speech pathology, some working across multiple disciplines)
- 5C. Do you have a minimum education requirement for AHA you employ within your speech pathology service? (a: yes, b: no)
- 5c. What is the minimum education requirement for AHAs within your speech pathology service? (a. High school equivalent- year 10, b. High school equivalent- year 12, c. Higher qualification such as vocational training, d. University degree, e. I don’t know)
- 5M. In which areas of practice to the AHAs support the speech pathology service? (Areas of practice: administration, language, motor speech, dysphagia, fluency, voice, AAC, rated as (1) Never (2) Occasionally (3) Sometimes (4) Fairly Often (5) Very Often

- 5E. How long has your speech pathology service employed AHAs? (a. I'm not sure, b. 0-2 years, c. 2-5 years, d. 5-10 years, e. 10 years or more)
- 5F. In which speech pathology service do you currently utilise your AHA? (a. Inpatient- Acute, b. Inpatient- Rehabilitation, c. Outpatient- Rehabilitation, d. Outpatient- General Service, e. Outpatient- Instrumental Clinic, f. Inpatient- Instrumental Clinic, g. Other)
- 5G. Do your allied health assistants complete any local training prior to commencing delegated clinical speech pathology tasks? (a: yes, b: no)
- 5H. What does the training consist of? (a. Individual training with the speech pathologist, b. Theoretical training, c. Observation of the speech pathologist completing the task, d. Supervised practice, e. Competency package, f. Other)
- 5I. Do you feel you are currently using your AHA workforce to their full potential? (a: yes, b: no)
- 5J. Which of the following do or would help you fully utilise your AHA workforce? (a. Standardisation of training resources, b. Standardisation of competency assessment process, c. Number of AHAs with vocational training, d. Standardisation regarding tasks appropriate for delegation, e. Speech pathologist training in delegation, f. AHA FTE at my facility, g. Standardisation regarding AHA scope of practice)
- 5m. Do you currently utilise AHA delegation in the area of dysphagia management? (a: yes, b: no)

AHA delegation in dysphagia

- 6A. What factors facilitate delegation to AHAs in the area of dysphagia within your speech pathology service? Facilitators: (1) Having a designated allied health assistant for

speech pathology, (2) Having prepared competency packages and assessment tools, (3) Having a clear role description, (4) Employing allied health assistants with vocational training, (5) Skills and attributes of the current allied health assistant, (6) Speech pathologist's skills in delegation, (7) Other.

Rates as Always Facilitates, Often Facilitates, Sometimes Facilitates, Does not facilitate).

- 6B. What factors limit your ability to delegate dysphagia related tasks to your AHA? Limitations: (1) Insufficient allied health assistant staff available (2) Insufficient speech pathology staff to provide training and supervision (3) Lack of defined delegation guidelines (4) Skills/attributes of current allied health assistant (5) Concerns regarding clinical risk, patient safety, accountability (6) Other.

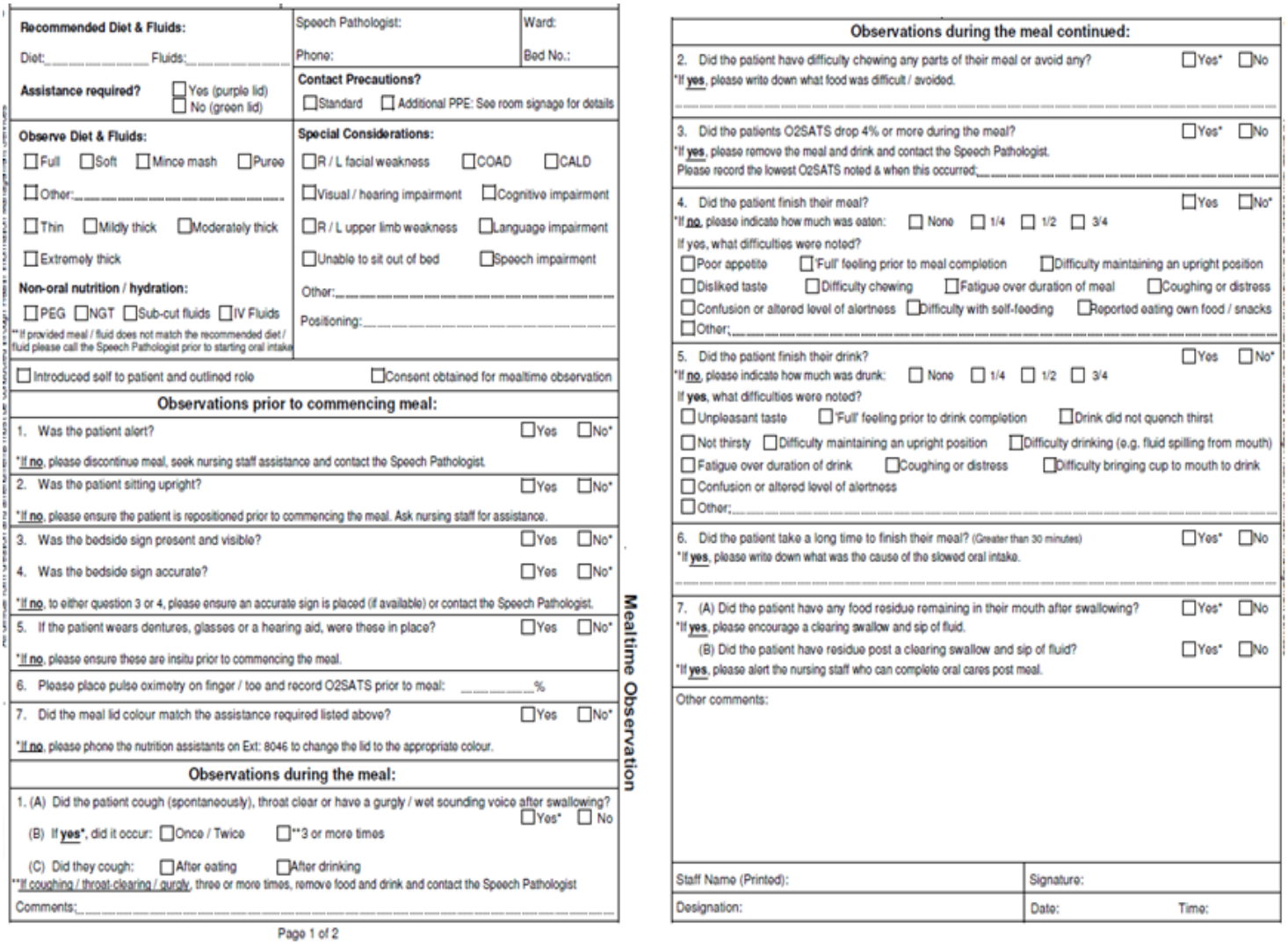
  Rates as Always Limits, Often Limits, Sometimes Limits, Does not limit).

- 7A. Do you or would you consider using a trained AHA to complete any of the following dysphagia related tasks? Tasks: (1) Dysphagia Screening (2) Safe Swallow Education (3) Modified Diet/Thickened Fluid Education (4) Mealtime Observation (5) Feeding Support (6) Assistance with Instrumental Clinic (7) Therapy Tasks.

  Rated as (1) Would never consider (2) Would consider in some instances (3) Would consider following local training (4) Currently delegating

END OF SURVEY

8.5 Mealtime Observation Tool- Chapter 3



Recommended Diet & Fluids:

Diet:_____ Fluids:_____

Assistance required? ☐ Yes (purple lid) ☐ No (green lid)

Speech Pathologist: | Ward:

Phone: | Bed No.:

Contact Precautions?

☐ Standard ☐ Additional PPE: See room signage for details

Observe Diet & Fluids:

☐ Full ☐ Soft ☐ Mince mash ☐ Puree

☐ Other:_____

☐ Thin ☐ Mildly thick ☐ Moderately thick

☐ Extremely thick

Non-oral nutrition / hydration:

☐ PEG ☐ NGT ☐ Sub-cut fluids ☐ IV Fluids

**If provided meal / fluid does not match the recommended diet / fluid please call the Speech Pathologist prior to starting oral intake

Special Considerations:

☐ R / L facial weakness ☐ COAD ☐ CALD

☐ Visual / hearing impairment ☐ Cognitive impairment

☐ R / L upper limb weakness ☐ Language impairment

☐ Unable to sit out of bed ☐ Speech impairment

Other:_____

Positioning:_____

☐ Introduced self to patient and outlined role ☐ Consent obtained for mealtime observation

Observations prior to commencing meal:

1. Was the patient alert? ☐ Yes ☐ No*

*If no, please discontinue meal, seek nursing staff assistance and contact the Speech Pathologist.

2. Was the patient sitting upright? ☐ Yes ☐ No*

*If no, please ensure the patient is repositioned prior to commencing the meal. Ask nursing staff for assistance.

3. Was the bedside sign present and visible? ☐ Yes ☐ No*

4. Was the bedside sign accurate? ☐ Yes ☐ No*

*If no, to either question 3 or 4, please ensure an accurate sign is placed (if available) or contact the Speech Pathologist.

5. If the patient wears dentures, glasses or a hearing aid, were these in place? ☐ Yes ☐ No*

*If no, please ensure these are insitu prior to commencing the meal.

6. Please place pulse oximetry on finger / toe and record O2SATS prior to meal: _____%

7. Did the meal lid colour match the assistance required listed above? ☐ Yes ☐ No*

*If no, please phone the nutrition assistants on Ext: 8046 to change the lid to the appropriate colour.

Observations during the meal:

1. (A) Did the patient cough (spontaneously), throat clear or have a gurgly / wet sounding voice after swallowing? ☐ Yes* ☐ No

(B) If **yes***, did it occur: ☐ Once / Twice ☐ **3 or more times

(C) Did they cough: ☐ After eating ☐ After drinking

**If coughing / throat-clearing / gurgly, three or more times, remove food and drink and contact the Speech Pathologist

Comments:_____

Page 1 of 2

Mealtime Observation

Observations during the meal continued:

2. Did the patient have difficulty chewing any parts of their meal or avoid any? ☐ Yes* ☐ No

*If **yes**, please write down what food was difficult / avoided.

3. Did the patients O2SATS drop 4% or more during the meal? ☐ Yes* ☐ No

*If **yes**, please remove the meal and drink and contact the Speech Pathologist.

Please record the lowest O2SATS noted & when this occurred:_____

4. Did the patient finish their meal? ☐ Yes ☐ No*

*If **no**, please indicate how much was eaten: ☐ None ☐ 1/4 ☐ 1/2 ☐ 3/4

If yes, what difficulties were noted?

☐ Poor appetite ☐ 'Full' feeling prior to meal completion ☐ Difficulty maintaining an upright position

☐ Disliked taste ☐ Difficulty chewing ☐ Fatigue over duration of meal ☐ Coughing or distress

☐ Confusion or altered level of alertness ☐ Difficulty with self-feeding ☐ Reported eating own food / snacks

☐ Other:_____

5. Did the patient finish their drink? ☐ Yes ☐ No*

*If **no**, please indicate how much was drunk: ☐ None ☐ 1/4 ☐ 1/2 ☐ 3/4

If **yes**, what difficulties were noted?

☐ Unpleasant taste ☐ 'Full' feeling prior to drink completion ☐ Drink did not quench thirst

☐ Not thirsty ☐ Difficulty maintaining an upright position ☐ Difficulty drinking (e.g. fluid spilling from mouth)

☐ Fatigue over duration of drink ☐ Coughing or distress ☐ Difficulty bringing cup to mouth to drink

☐ Confusion or altered level of alertness

☐ Other:_____

6. Did the patient take a long time to finish their meal? (Greater than 30 minutes) ☐ Yes* ☐ No

*If **yes**, please write down what was the cause of the slowed oral intake.

7. (A) Did the patient have any food residue remaining in their mouth after swallowing? ☐ Yes* ☐ No

*If **yes**, please encourage a clearing swallow and sip of fluid.

(B) Did the patient have residue post a clearing swallow and sip of fluid? ☐ Yes* ☐ No

*If **yes**, please alert the nursing staff who can complete oral cares post meal.

Other comments:

Staff Name (Printed): | Signature:

Designation: | Date: Time:

8.6 Performance Criteria Checklist- Chapter 4

Performance Criteria	Knowledge acquired	Supervised task practice	Competency assessment
	Date and initials of supervising AHP	Date and initials of supervising AHP	Date and initials of supervising AHP
Demonstrates knowledge of fundamental concepts required to undertake the task.			
Obtains all required information from delegating health professional, and seeks clarification if required, prior to accepting and proceeding with the delegated task			
Completes preparation for task including collection of local dysphagia screening tools			
Introduces self to client and checks client identification.			
Describes purpose of delegated task and seeks informed consent.			
Positions self and client appropriately to complete task and ensure safety.			
Delivers task effectively and safely as per delegated instructions and clinical task instruction procedure. a) Clearly explains task, checking client's understanding and obtains consent to proceed b) Completes modified Yale swallow protocol exclusion criteria. If an exclusion criteria present consults with the speech pathologist. c) Completes EAT-10. If client unable to answer questions or score ≥ 3 consults with the speech pathologist. d) Checks client's posture and observes their face/neck for asymmetry, mouth closure, drooling, slurred speech, accessory muscle usage, etc. If present consults with the speech pathologist. e) Gives the client the 1/3 filled cup of water asking them to drink "slowly and steadily without stopping". f) Identifies risk of dysphagia and aspiration based on screening criteria, observation and initiating vocalisation. g) During task, maintains a safe clinical environment and manages risks appropriately. h) Provides feedback to client on performance during and at completion of task.			
Documents the outcomes of the task in the clinical record, consistent with relevant			

documentation standards and local procedures.			
Provides accurate and comprehensive feedback to the delegating health professional.			