An Evidence-Based Model of Clinical Assessment Workload in the Health Professions

FINAL REPORT

13 December 2013

Final Report – *An Evidence Based Model of Clinical Assessment Workload in the Health Professions*
HWA Strategic Research Program, December 2013

1

Project Team: Professor **Wendy Hu**, School of Medicine, University of Western Sydney (*Project Lead, (WH)*)

A/Prof **Andrea Bialocerkowski**, School of Rehabilitation Sciences, Griffith University

A/Prof **Yenna Salamonson**, School of Nursing and Midwifery, University of Western Sydney

Dr. **Lee Zakrzewski**, School of Health and Science (Occupational Therapy), University of Western Sydney

Ms. **Verona du Toit**, School of Health and Science (Podiatry, Adjunct Fellow), School of Medicine, University of Western Sydney (*Research Fellow, (VdT)*)

Dr. **Gisselle Gallego**, Centre for Health Research, School of Medicine, University of Western Sydney

Professor **Peter Zelas**, Clinical Dean, Blacktown Mt Druitt Clinical School, University of Western Sydney

A/Prof **James Kwan**, Associate Professor in Medical Education (Assessment), School of Medicine, University of Western Sydney

Professor **Lambert Schuwirth**, Flinders Medical School, Flinders University and Maastricht University

Professor **Rick Iedema**, Centre for Health Communication, University of Technology, Sydney

Table of Contents

Executive Summary

This research project was conducted to better understand the real world practice of workplace based assessments (WBA), and in particular the impact of WBA on the workload of clinical supervisors in the health professions. Despite the increasing need for WBA in health professions, little empirical research has been conducted on how WBA is actually performed, and on its impact in healthcare workplaces where patient care is paramount. As performing WBA is reliant on clinical supervisors who must combine clinical with teaching responsibilities and patient care, this project examined the workload associated with WBA for clinical supervisors.

Project findings have been used to develop an evidence-based model for the workload of clinical assessment in the health professions. Twenty-five datasets were created with multi-modal observational data from *medicine, nursing, occupational therapy, physiotherapy, and podiatry* health professions, in a range of workplaces, from private practices to inpatient hospital wards. Each dataset includes (1) video recordings and field notes of actual student assessments conducted by experienced clinical supervisors; (2) audio interviews using video triggered recall to document how supervisors judge student competence; and (3) interviews with supervisors on the workload impact of WBA. An expert panel of ten interdisciplinary members iteratively reviewed the datasets, using a modified Delphi technique, to develop an evidence based model of assessment workload which was applied to the datasets.
The following summarise key findings:

- The evidence-based model comprises eleven themes that were reached by consensus from a conceptual framework. The themes describe critical assessment activities and tasks that arise during clinical supervision.

- The study outcomes support the applicability of the HWA National Clinical Supervision Support Framework (July 2011) and Competency Resource (May 2013) to WBA to the Australian context.

- Analyses of the datasets and themes identified commonalities between different health professions, and differences between private practice and public health settings which impact on WBA.

- A robust research methodology was developed and successfully applied to a broad sample of professions and health care settings, providing strong evidence to support the project findings s.

Potential outcomes from this research include:

- Increased supervision capacity by providing an evidence based framework for evaluating and quantifying WBA activities which will:
    o promote a transparent and equitable allocation of teaching workload,
    o improve assessment quality by using metrics which are meaningful to expert assessors.

- Evidence based improvements for WBA procedures so that conducting WBA is more feasible and satisfying for assessors, for example by delegating administrative activities which significantly impact on workload but do not require clinical and assessment expertise.

- The study findings suggest that future research on the complex activities of WBA should focus on: Testing the framework by implementing and evaluating interventions which are based on the framework, across different settings
- Extending the framework through further theory development

1. Background

Increasingly, workplace based assessment (WBA), or the evaluation of performance in real world practice settings [1], is used in the health professions, across the continuum from professional entry programs to continuing professional education. WBA aims to provide authentic and practice based teaching and learning, thus ensuring that graduates and practitioners meet accepted standards for delivering safe and competent clinical care. A variety of WBA tools and formats exist, each with their own terminology, and which are specific to each profession. Some examples are outlined in Table 1, including assessments which health professional students are required to complete during their clinical placements [2-5], and which were sampled for this project.

Successful student learning in the workplace assumes that clinical supervisors and clinical settings have the capacity to deliver effective training, either in addition to, or integrated with, the delivery of clinical care. While there is indirect evidence – for example in the literature on motivating clinicians to teach [6] – that teaching roles are seen as being in conflict with the primary role of clinicians to provide clinical care, there is little direct evidence of the impact of WBA, a key task of clinical supervisors, on their clinical workloads.

Furthermore, much of the educational research to date on WBA has focused on the validity and reliability of such assessments from a quantitative psychometric perspective. It is now recognised that reductionist and context-free analytic frameworks fail to capture what is authentic and valid about WBA – that it is situated in a highly contextualised workplaces, and dependent on the creation and evolution of unique encounters between supervisors, students, patients, and healthcare team members over a period of time [7]. This concept of WBA captures the richness and value of such assessment modalities, but also presents challenges in conducting empirical research on this complex activity.

One of the key aims of this project, therefore, was to develop and refine a research methodology based on well - established research traditions to study these complex phenomena, by adapting and applying an appropriate methodology to health professional educational research. It was hoped that by using sound methods to document and analyse WBA activities, the project could provide a rigorous understanding of the impact of performing WBA on the workload of clinical supervisors ("assessors").

As well as testing new methodology, another key aim was to develop an evidence-based model of the workload of assessment for clinical supervisors in different health professions. It was hypothesized that if a common model could be found across health professions, it could potentially be used to develop training that would effectively and more efficiently support clinical supervisors. Furthermore, if empirical measures for workload could be defined, the model could also be used to more accurately quantify this key supervisory activity, the costs of which are hidden but known to be significant [8].

Table 1 Examples of WBA used in Australian health professional undergraduate programs

Name of assessment	Timing in placement	Formative and/or summative	Scope of knowledge and skills tested	Level of student performance	Assessment information source(s)	Feedback format
MEDICINE						
Mini Clinical Examination (CEX) [2]	During placement	Both – generally formative only	Discrete clinical skill eg taking a history	Student performs	Direct observation	Verbal and written
Logbooks	During and end of placement	Both	Mandated or range of procedures	Student may observe and/or perform	May be observed	Written record
Direct observation of Procedures (DOPS)	During placement	Both	Discrete procedural skill	Student performs	Direct observation	Verbal and written
In Training Assessment (ITA)	End of placement	Summative	Overall performance	Student may observe and/or perform	Direct observation, may include healthcare team observations	Verbal and written
Multisource feedback	End of placement	Summative	Overall performance	Student may observe and/or perform	Direct observation, must include healthcare team observations	Verbal and written
Case based Discussion, Modified Long Case	During placement	Both	Clinical skills (history and examination), Clinical reasoning	Student performs	Direct Observation of case presentation and discussion only	Verbal and written

NURSING						
Clinical Summary (students on each clinical placement are assessed against Australian Nursing and Midwifery Council (ANMC) [3] 19 criteria clustered into 4 domains: i) Professional Practice; ii) Critical thinking and analysis; iii) Provision and coordination of care; and iv) Collaborative and therapeutic practice.	End of placement	Both	Overall performance	Students may observe and perform (depending on student/year level	Direct observation and feedback from healthcare team	Verbal and written
OCCUPATIONAL THERAPY						
Student Practice Evaluation Form	Midway and end of placement	Both	Communication, professional behaviour and overall skills related to area of practice	Students observe in early placements then perform in longer placement	Observation and feedback from other team members	Verbal and written

PHYSIOTHERAPY

Assessment of Physiotherapy Practice (APP) [4]	Mid and end of 5 week full time clinical block	Both	Competence at a graduate standard specific areas of physiotherapy	Student performs	Direct observation plus feedback from other supervisors when appropriate	Verbal and written
Oral presentation	Last week of the 5 week full time clinical placement	Both	Clinical reasoning associated with a specific case presentation	Student performs	Direct observation	Verbal and written

PODIATRY

Portfolio (students are assessed against Competency Standards 1-8 [5] within the podiatry framework context for entry level competencies)	During and end of placement	Both	Overall clinical skills and performance (meeting elements under each standard)	Students may observe and perform (depending on student/year level)	Combination – direct observation or team observation	Both verbal and written

A Research Methodology for Clinical Supervision Activities

Clinical work is characterised by complex interrelationships and activities involving a diverse array of health service staff and health care teams. As a result, these activities often appear opaque and incomprehensible to patients and outsiders. Given that clinical teaching is embedded in clinical work, the project adopted an ethnographic approach. Ethnography is an intensive, observational methodology from anthropology, suited for documenting and making explicit the culture and everyday practices of communities or organisations such as healthcare workplaces [9]. A range of empirical data is gathered in order to present both a detailed 'insider' perspective and an 'outsider' critique of what happens within that community or organisation. Data sources may include field notes which capture periods of intensive observation, in-depth and repeated informal interviews, and documents, in order to develop a 'rich' picture of events and daily activities.

In particular, private activities and events which are normally difficult to access may be studied, due to the close proximity of the researcher with members of the community being studied [10]. Examples germane to this project include assessments which involve sick patients, confidential healthcare information, and delivery of high acuity care. Moreover, supervisors and students whose performance may be affected by the presence of an unfamiliar observer are less likely to be affected if the researcher has become a familiar part of the team. Ethnographic researchers therefore must spend time in the community which is being studied, to facilitate trust and open discussions with research participants.

So paradoxically, the researcher needs to become "invisible", to "visibilise" the tacit knowledge and decisions of clinical supervisors when performing WBA. Chief of these are the internalised judgements made by clinical supervisors when assessing the competence of their students. "Visibilising" or making explicit this implicit or unspoken knowledge [11] requires an additional mode of data collection; video ethnography.

In video ethnography, videos of actual everyday interactions in natural environments are collected and then used as triggers to stimulate recall and reflection by the participants on their thoughts, and the cues and values they use to perform the recorded activities [11,12]. This approach addresses issues with traditional methods for studying expert judgements such as recall bias and socially desirable descriptions, which arise when participants are merely asked to describe their recall of events. Video ethnography has been used successfully to capture complex interactions in busy clinical environments, and to provide a basis for the analysis of such events [13].

Given the potentially sensitive nature of the activities being recorded, such research must be conducted with due consideration of the ethical implications and the full consent of participants [14]. Participants can be reassured by the obligations of researchers to keep any data private and secure, with dissemination of any identifiable data prohibited unless specific and additional consent is obtained. It is also important in such research that the process of data collection is owned by the participant; not only by making data collection times and locations convenient, but also by providing an opportunity for their own professional development when viewing and 'talking through' the video recordings.

A comprehensive and participatory approach to data collection and analysis is typical of video ethnography. To study the complex activity of WBA, sampling and recruitment should include key informants and all healthcare settings where WBA may take place. Accordingly this study aimed to cover the span of community based private to acute inpatient services, from a variety of health professions, including medicine, nursing, occupational therapy, physiotherapy and podiatry. To manage the resultant volume of video, audio, documentary and textual data, a reflexive approach becomes necessary, with sampling and analysis occurring in iterative waves of data collection, analysis, review, re-collection and re-analysis. Given the inclusion of different professions and the interdisciplinary nature of such research, a representative panel with members from all major disciplinary areas is vital to direct and support the research process.

By taking a multilayered and comprehensive approach, the steps of which are detailed below, the accuracy and robustness of any findings is greatly enhanced.

2. Methods

Setting

The project was conducted in hospital, community-based and private practice sites in Greater Western Sydney, which includes the Sydney West and Sydney South West Local Health Districts. The region has 10 hospitals (2 major tertiary hospitals) and a wide range of health services which serve a culturally and linguistically diverse and socio-economically disadvantaged population of 1.65 million with a greater than national average burden of chronic and complex disease [15]. Despite being relatively underserved compared to inner urban areas, Greater Western Sydney is a major growth area for education and training in the health professions, with professional entry students from a number of universities placed in primary, secondary and tertiary care services (see Table 2). The region is thus well suited to the study of the impact of training on clinical supervisor workload.

Table 2 Universities which place health professional students in Greater Western Sydney health services

Profession	Universities
1. Medicine	University of Western Sydney University of Sydney University of New South Wales Notre Dame University (Sydney) University of Wollongong Australian National University University of Newcastle
2. Nursing	University of Western Sydney University of Sydney Notre Dame University (Sydney) University of Wollongong University of Technology Sydney Australian Catholic University University of Tasmania
3. Occupational Therapy	University of Western Sydney University of Sydney University of Wollongong Australian Catholic University Charles Sturt University University of Newcastle Southern Cross University
4. Physiotherapy	University of Western Sydney University of Sydney Charles Sturt University University of Canberra University of Newcastle Macquarie University Australian Catholic University
5. Podiatry	University of Western Sydney Charles Sturt University University of Newcastle La Trobe University

Ethics

The project was approved by the University of Western Sydney (UWS) Human Research Ethics Committee ID H8791. Additional site approval was obtained from the senior management of each health service from which data were collected.

Participants and recruitment

To minimise the impact of the research on supervisors' usual assessment practices and on student final assessment results, only expert supervisors and formative assessments were sampled for this project.

Expert clinical supervisors ('assessors') were purposively sampled. They were identified by peer nomination, a commonly used method for selecting experts in judgement and decision making research [16]. Recruitment was facilitated by the heads of the respective health professional training programs at UWS, who were familiar with the levels of experience and availability of clinical supervisors, and the timing of clinical placements which could be recruited to the study.

Stratified purposive sampling [17] for maximal variation was used to ensure inclusion of medicine, nursing, occupational therapy, physiotherapy and podiatry professions, across the breadth of healthcare settings where students in these training programs were placed.

Data collection

Anticipating the complexity of WBA, a number of data types and sources were collected around each assessment event to create a dataset or case, for each event. Each case comprised:

- Field notes and informal audio recordings of the supervisor preparing for, conducting and concluding a formative assessment.
- Video recordings of the student performing the assessment while being observed by the assessor.
- Video recordings of verbal feedback given to the student after the assessment.
- Audio recordings of the assessor recalling and verbalising ("talking through") their thoughts and actions during the assessment, triggered as they viewed the video of the assessment and feedback.
- Audio recordings of assessor interviews on the workload of clinical assessments in the workplace.
- Verbatim transcriptions of digital audio recordings.
- Documents including assessment tools and curriculum documents pertaining to the recorded assessment.

All assessments were part of the clinical placement components of the accredited professional entry training programs involved in the study. These placements were of one to six weeks duration. The "talk through" recording occurred as soon as possible after the actual assessment to maximise recall of the event. An interview guide was used, with prompts asking the supervisor to describe the activity, identify cues on

which they based their judgement of the student's performance, and about the workload of WBA. For some supervisors, these workload interviews were conducted at a separate time to the assessment event so as to minimise interruption to assessor workload and allow time for reflection.

Data Analysis

QSR NVivo® Version 10 (QSR International, Australia) was used to manage and analyse the datasets. Data analysis occurred in successive waves. An expert multidisciplinary panel was convened for the project, comprising at least one senior educator in the health professions sampled in the study, as well as experts in video ethnography and health workforce. Panel members contributed to the analysis by iteratively and independently reviewing the data, alternating with panel discussions in workshops. These analyses and discussions were collated and in turn analysed for common themes which were developed into draft models of workload. The final consensus model was reached through four rounds of a modified Delphi technique [18], as represented in Figure 1. This variant of the Delphi technique thus harnessed the broad range of views from the expert panel while retaining the consensus-building benefits of group discussions.

Two workshops were organised between the waves of independent data review and analysis, to:
(1) familiarise panel members with the data and preliminary data analyses,
(2) draft a model of the workload in clinical assessment,
(3) test the framework, develop common themes, which were then re-tested against the data,
(4) confirm the final version of the model and that all relevant input from the expert panel had been taken into account,
(5) apply the themes to the datasets in a final Delphi round, and
(6) confirm that the model met the study objectives.
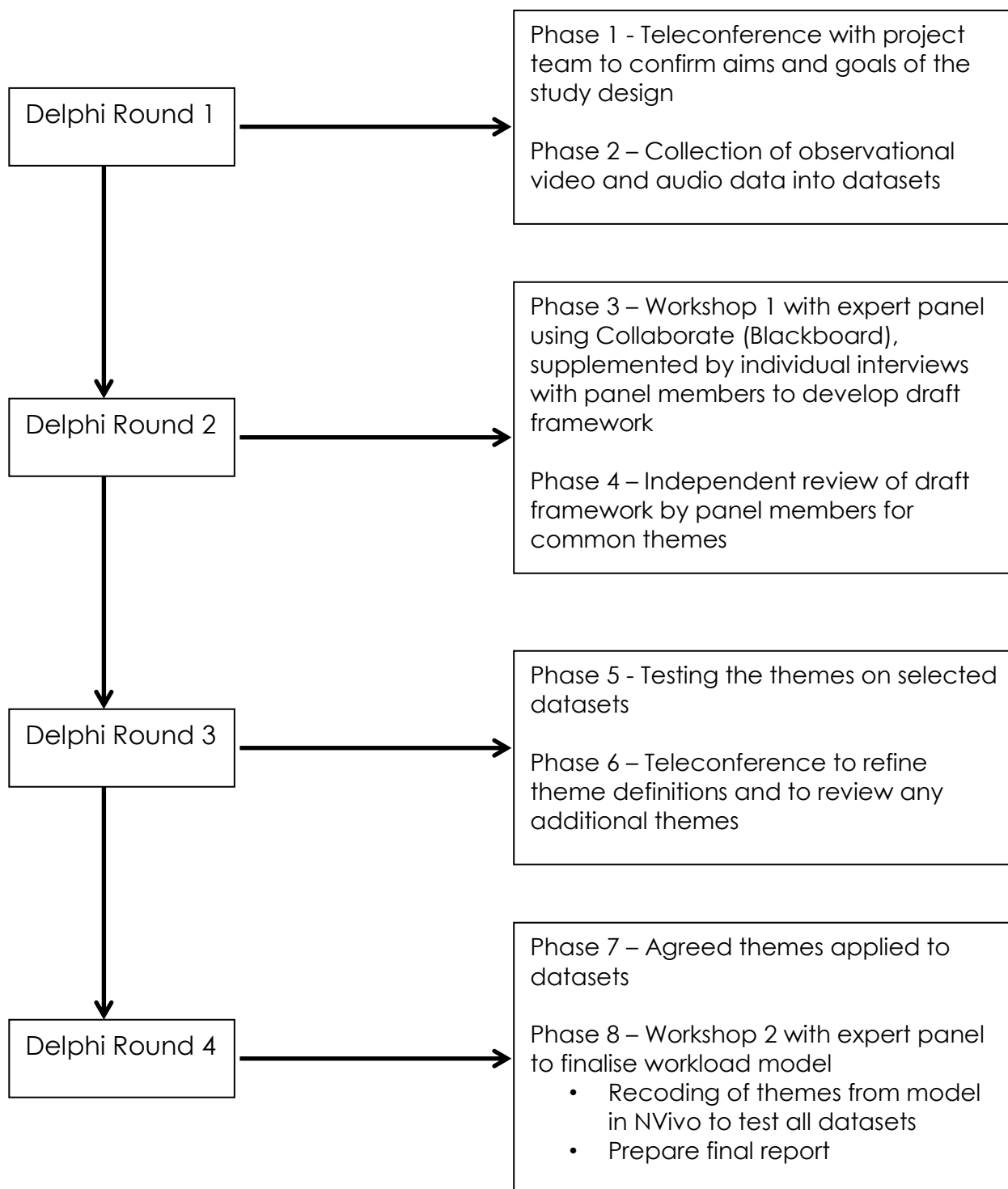
Figure 1 Flowchart of Study Protocol

For transferability, so that the methodology may be adopted by other researchers, the following section describes in detail each stage of data collection, analysis and development of the workload model, and includes the separate phases in each of the 4 Delphi rounds (see Figure 1).

Delphi Round 1
Phase 1 - Convening the expert panel
An interdisciplinary expert panel of ten members was convened, including health professional educational leads and heads of professional entry training programs from each of the sampled health professions, as well as methodological experts. The panel included:

1. **Professor Wendy Hu**, Director of Academic Program, Medicine, UWS
2. **Associate Professor Andrea Bialocerkowski**, Physiotherapy, Griffith University, previous Head of Program, Physiotherapy, UWS.
3. **Associate Professor Yenna Salamonson**, Nursing and Midwifery, previous Head of International Programs, UWS
4. **Dr Lee Zakrzewski**, Fieldwork Program Coordinator, Occupational Therapy, UWS
5. **Ms Verona du Toit**, previous Head of Program, Podiatry, UWS
6. **Dr Gisselle Gallego**, Health Economist and health workforce researcher, Centre for Health Research, UWS
7. **Professor Peter Zelas**, Clinical Dean, Blacktown Hospital Clinical School, Medicine, UWS
8. **Associate Professor James Kwan**, Head of Assessment, Medicine, UWS
9. **Professor Lambert Schuwirth**, Professor of Innovation in Medical Education, Medicine, Flinders and Maastricht University
10. **Professor Rick Iedema**, Video Ethnography, Centre for Health Communication, University of Technology, Sydney

In this preparatory phase of the project, the panel advised on likely factors influencing the quality and conduct of assessments in the workplace, reviewed the timing and location of clinical placements in the respective curricula, and advised on recruitment of assessors to the project.

Phase 2 – Recruitment and data collection
Two researchers (WH, VdT), recruited and collected datasets centred on discrete assessment events, or cases. Key characteristics of the assessments and participants, including assessor role and level of experience, clinical environment, case complexity, student year of study, gender and language spoken at home (of both assessor and student) were collected, and documented.

Field note data from observing the preparation, conduct and conclusion of each assessment and feedback session were taken. As soon as practicable after each assessment event, the assessor viewed a video of the assessment. While viewing the video, with the use of semi-structured interview prompts, assessors were asked to (1) describe their reasoning and the cues they used to judge the student's clinical performance level, and (2) explain the workload involved in assessing students. They were encouraged to describe the gamut of tasks from inception to completion of the assessment as required by the university teaching program where the student was enrolled. These interviews were digitally audio recorded and transcribed verbatim for analysis.

Delphi Round 2
Phase 3 – Workshop 1 – Preliminary data analysis

Prior to the first workshop, each panel member was provided with data for analysis. Additionally, selected datasets were independently reviewed by two panel members, who were paired by being from the same, and a different, professional background from the assessor being recorded. It was hypothesised that reviewers from the same profession could provide 'insider' insights into what should or could have happened in each assessment, whereas the 'outsider' or 'external' reviewer could provide insights from another disciplinary perspective. This broadened the range of interpretations, ensuring that theoretical saturation was achieved, and allowed better identification of commonalities and differences between professions.

During the workshop these preliminary results were discussed by each reviewer in turn and the assessments compared, in order to identify the range and type of activities that assessors performed. Based on these results an early conceptual framework model for workload assessment was developed. The three main components of this first model are illustrated in Appendix 1; firstly, the factors influencing the workload of assessment; secondly, the types of activities, and thirdly, the tasks required to conduct assessment activities. Sub-categories and examples (Table 3) were subsequently generated which allowed the formulation of themes which to be tested against new datasets.

Table 3. Early conceptual framework model of workload of clinical assessment

Components	Subcategories and examples
1. Factors influencing workload of assessment	• People factors, e.g. the student, supervisor and patient • System or structure, e.g. organizational and professional culture, the work environment • Employment structures, e.g. awards, payment, and position descriptions
2. Types of assessment activities	• Assessment preparation, e.g. liaising with care team, negotiation with patient • Interpersonal interaction, e.g. communication, judgement, and emotions generated by assessment • Supervisor training, expertise, and support
3. Tasks of clinical assessment	• Orientation of student to assessment e.g. discussion of procedure • Conduct of assessments, e.g. observations, questioning, and feedback • Documentation, e.g. completion of assessment tools, and report writing • Training and mentoring of staff and students

Phase 4 – Early conceptual framework model

Following the first workshop, panel members independently reviewed the early conceptual model for (1) comprehensiveness; whether it had captured all the activities in clinical assessment, (2) impact; the factors influencing workload of clinical assessment, (3) priority; ranking the factors which most influenced those which least influenced assessor workload, and (4) similarities and differences between the health professions with regards to clinical assessment (Appendix 1).

In keeping with the modified Delphi technique, this process was conducted anonymously with each individual panel member returning their opinions independently via email to one research team member, the Research Fellow (VdT).

Following the nomination and inclusion of missing elements and the ranking of factors by degree of impact on workload, the identified activities, tasks and factors were developed at this stage into ten themes with descriptors as an early evidence based model of assessment workload (Figure 2) and (Appendix 2).
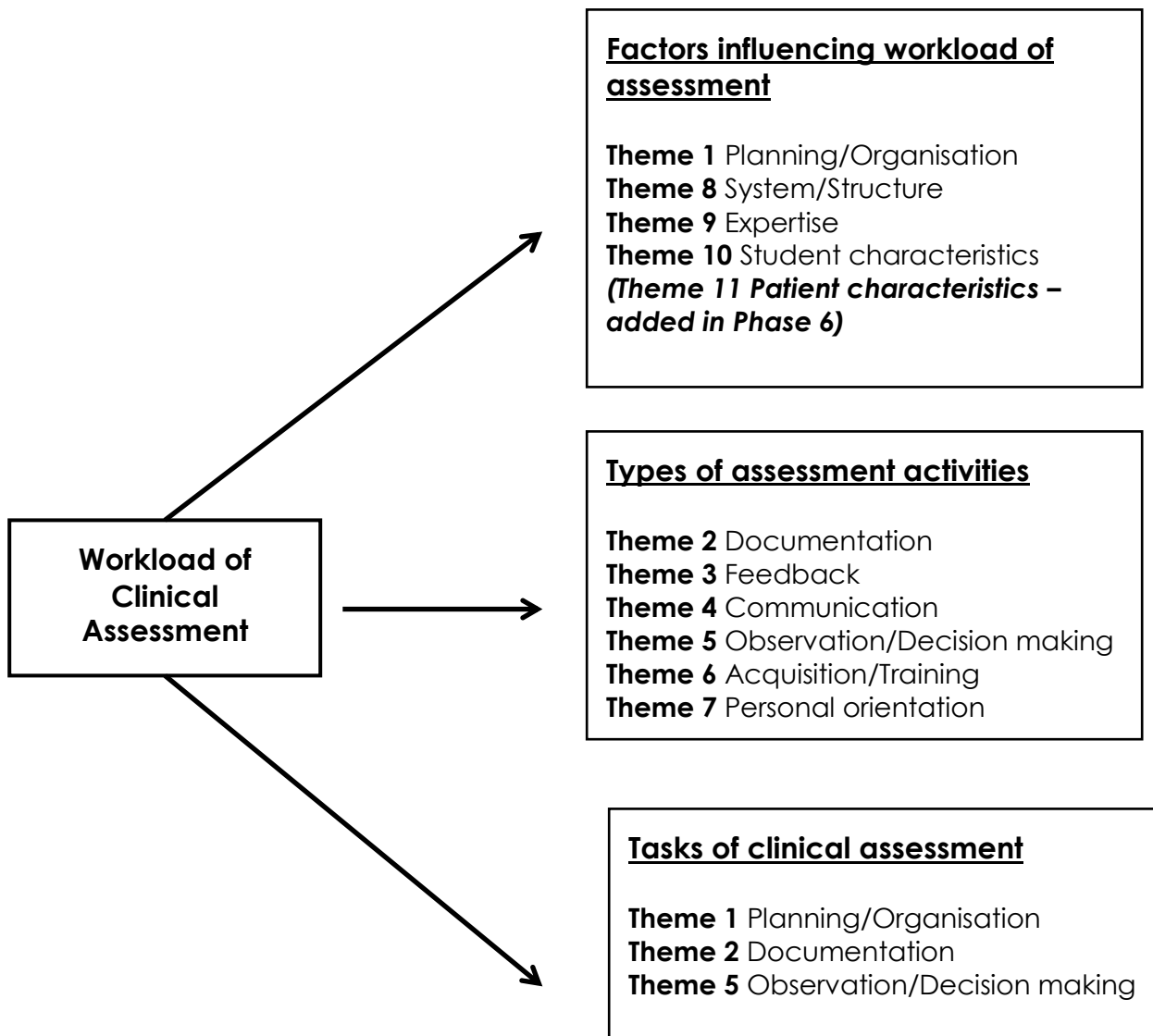
Factors influencing workload of assessment

Theme 1 Planning/Organisation
Theme 8 System/Structure
Theme 9 Expertise
Theme 10 Student characteristics
(Theme 11 Patient characteristics – added in Phase 6)

Workload of Clinical Assessment

Types of assessment activities

Theme 2 Documentation
Theme 3 Feedback
Theme 4 Communication
Theme 5 Observation/Decision making
Theme 6 Acquisition/Training
Theme 7 Personal orientation

Tasks of clinical assessment

Theme 1 Planning/Organisation
Theme 2 Documentation
Theme 5 Observation/Decision making

Figure 2. Evidence-based model of workload of WBA: Themes

Delphi Round 3
Phase 5 and 6 – Testing the themes derived from the model
Following identification of the initial ten themes, each panel member received datasets comprising video recordings, audio transcripts and relevant documents. Each panel member then tested the ten themes by applying them to the supplied datasets. These results were individually returned to the Research Fellow for collation. Subsequently, a teleconference was held to discuss each panel member's findings and to refine the theme descriptors. One new theme which significantly influenced the workload of assessment was identified: *patient characteristics*, making a total of 11 themes. See Table 5 and Appendix 2 for the outline of the theme definitions and descriptors.

Delphi Round 4
Phase 7 – Re-testing the themes against new datasets

In this final Delphi round the 11 themes were applied to the remaining datasets. Again, a panel member from the same profession and a panel member from a different profession reviewed the same dataset to ensure thematic saturation and broaden the scope of analysis. An example of a transcript with the themes applied in this round can be found in Appendix 3.

No further themes were identified.

Phase 8 – Confirming the evidence-based model

A second workshop was held to reach final agreement on the themes, refine and clarify the theme descriptors so that they were distinct from each other, and to agree on key lessons from the project. As a final check of the robustness of the themes, all datasets were re-coded using Nvivo.

3. Results

A total of 25 datasets were collected across five professions, in various clinical settings (public and private sectors). These included Medicine (6), Nursing (6), Occupational Therapy (2), Physiotherapy (6), and Podiatry (5)(see Table 4).

Table 4. Summary of datasets

Data	Profession				
	Medicine	**Nursing**	**Occupational Therapy**	**Physiotherapy**	**Podiatry**
Clinical setting	Inpatient, Outpatient, private	Inpatient (one high dependency ward), Outpatient	Inpatient, private	Inpatient, outpatient	Outpatient, private
TOTALS	6	6	2	6	5
	Overall total = 25 (3 in private practice)				

In summary, and as detailed above, an early conceptual model was developed following preliminary data analysis by the expert panel (Delphi Round 2). The components of this model, including the activities, tasks and factors influencing the workload of WBA were refined into themes, ranked according to their impact on assessor workload (Delphi Round 3). These themes were tested and re-tested by expert panel members from the same, and different professional backgrounds as the assessor recorded in the dataset. This ultimately provided a robust model comprising 11 themes with detailed descriptors (Delphi Round 4). These themes are outlined in Table 5. Additional details of the 11 theme definitions, descriptions, and examples can be found in Appendix 2, and illustrative quotes from the data in Appendix 4.

Table 5. Themes and Descriptors, ranked according to impact on workload

Theme	Descriptor
1 Planning/Organising	Activities performed by supervisors to plan and organise students' clinical placements, before, during and after the placement. This may include negotiating and accepting student placements; orienting and preparing students, staff and the learning environment; and meeting university, hospital and health service requirements for placements and assessments.
2 Documentation	The activity of creating and maintaining records including patient notes, student learning contracts, feedback, reports and emails. This includes documenting 'at risk' students and incident reports to person(s) in charge of organising the placements in the health setting and/or the university.

3 Feedback	The act of providing information to learners about their learning progress, strengths and weaknesses. It also pertains to how and where these acts occur. Examples include different formats such individual and group debriefings, the varying approaches taken by individual assessors and institutional factors and practices (e.g. physical facilities, feedback forms) which support or hamper the provision of feedback that is effective for learning.
4 Communication	Acts of communication, and the ability of the supervisor to skillfully and effectively communicate on interpersonal group and institutional levels. This includes communicating with the student before, during and after the assessment; the skills required to negotiate with staff in the health service or team, or university staff, to prepare for and conduct assessments, and to initiate and successfully conduct difficult interactions. Examples of the latter include negotiating opportunities for clinical assessments with patients in busy clinical services; providing feedback on poorly performed assessments.
5 Observation/Decision making	Activities where the supervisor gathers information about the student's performance, for example through direct observation of the student, collecting evidence from clinical team members and other sources such as patient records and documentation to make justifiable decisions about the student's abilities.
6 Acquisition/Training	Activities where supervisors participate in formal training, peer networks and informal learning to support student supervision, assessment and feedback activities. It includes reading and studying curricula, training documents and teaching resources, and maintaining clinical skills and professional accreditation.
7 Personal orientation	The supervisor's attitudes to, values and beliefs about being a teacher and supervisor, including how intrinsic and extrinsic motivators (such as compensation and tangible rewards) may be personally motivating.
8 System/Structure	Organisational factors (including university and health service rules, regulations, legal requirements, structures and relationships) that impact on the work of assessment. Examples include the structure and organisation of private versus public health services and teams, hospital versus community based services and staffing, patient load and populations, formalised teaching and placement coordinator roles, teaching provisions in employment agreements, and other organisational

	structures, processes and drivers which support or do not support teaching and learning.
9 Expertise	The exercise of requisite knowledge, skills and experience gained as an assessor and as a clinician to confidently, efficiently and effectively conduct assessments and make judgements (positive and negative) about student performance with regards to an appropriate level of competence in clinical practice. This includes the ability to prioritise, focus on and selectively collect and synthesise information arising simultaneously from disparate sources such as the clinical setting, student performance and patient feedback to expedite the conduct and conclusion of assessments. A pre-requisite for making judgements of student competence is clinical expertise, or knowledge and experience in what constitutes quality clinical practice in the area that is being assessed. Recognition of expert assessor status may be evidenced by peer nomination and roles and responsibilities in mentoring and training peers and other staff to assess and supervise.
10 Student characteristics	Characteristics of the student which may require the supervisor to adapt their approach to teaching and learning and to assessment activities. These include innate ability, knowledge, skill levels, communication and learning styles, values and attitudes to learning. Influences include the student's year of study, age, gender, maturity, prior clinical experience, personality, level of initiative and confidence to engage with learning opportunities in the workplace, receptivity to instruction and feedback, and self-directed learning behaviours. Level of ability will affect the degree to which students can perform clinical work and alleviate clinical workload, thus affecting the supervisor's experience of overall workload.
11 Patient characteristics	Characteristics of the patient which may require the supervisor and student to adapt their approach to teaching and learning, and to assessment activities. These include severity of illness, underlying health condition(s), health service experiences, ability to communicate and communication style, willingness to participate in teaching, personal values and attitudes towards students and learning, and cultural background.

4. Discussion

This project has completed a significant body of work in an area which has been previously under-researched due to its complexity and "hidden" nature. By extending and applying a robust and exhaustive process of iterative data collection and analysis under the guidance of an expert panel, the project has begun to make visible parts of the "hidden curriculum". The process has been documented in some detail to provide other researchers and potential collaborators with sufficient information to apply the method when examining clinical education and supervision in their own settings.

While requiring the time and commitment of all panel members[1], the methodology has been tested successfully with relatively limited resources over a short time period. Due to the strength and reach of the expert panel, a broad sample of assessment in different health professions has been documented and analysed, with the identification of commonalities and differences between them.

These commonalities have been assembled into a robust empirical model of clinical assessment workload, the other key outcome of the project. This model is potentially generalisable to regions outside Greater Western Sydney due to the inclusion of multiple health professions, the collaborative partnership between four universities in three States, and an interdisciplinary approach to data analysis, including the use of clinical, educational, linguistic and economic disciplinary lenses.

The themes and their descriptors represent clearly defined and measureable activities and tasks involved in WBA for assessors across the health professions. The ranking of the themes for impact on workload also points towards those activities which may be most usefully targeted when designing interventions to address the perceived workload of clinical supervisors, and thus, more efficiently increase capacity for supervision.

Methodological issues included possible delays due to the need to obtain ethical approval for potentially identifiable video recordings in health care settings. This was avoided due to approvals already being obtained for an earlier pilot study.

---

[1] An aim of the project was to develop and test a methodology for researching complex in-situ activities, so a process evaluation of the time taken to analyse the datasets was conducted.
Panel members reported the time taken to completion of each step was:
- Video viewing (assessment and feedback): 25 minutes to 2 hours
- Interview (talk through with assessor): 15 minutes to 3.5 hours
- Transcripts (assigning themes): 1 hour to 6 hours (depending on interruptions, other work commitments etc.)

The time required was obviously dependent on the length of the recording, but assessment complexity, requiring multiple viewings of recorded segments also influenced time required.

Permissions from each recording site proved relatively straightforward to obtain due to the close relationship of UWS with the health services in Greater Western Sydney. Without such relationships, clinical placements, let alone training and education partnerships and innovations, cannot take place. The risks of innovative research can be minimised by thorough briefings, the embedded nature of ethnographic research, the willingness of researchers to withdraw and or fit in with clinical care schedules, adherence to the principles and obligations of the ethical and responsible conduct of research, and most importantly, a sense of ownership of the data collection and analysis process by the participants, with input from an expert panel comprising members of the same health professions.

Despite the diversity and range of assessment events and contexts recorded the datasets, and the different disciplinary backgrounds of the expert panel members, reaching consensus in the data analysis was also relatively straightforward. There were no irreconcilable differences; rather, differences in panel members' interpretations were used to review and refine the theme descriptors so that an agreed definition was reached. However, it was noted in the second workshop that when panelists' results were compared, differences in analysis of the same dataset were due to panel members taking a different analytic stance when reviewing the data. For example, one reviewer could take a positivist stance (i.e. did the participant specifically mention or state the theme), whereas another could take an interpretive approach (i.e. did the panellist interpret the participants' response as being representative of the theme). These differences were relatively easy to resolve by discussion and agreement on the stance to be taken. For example the themes of 'Patient Characteristics' (Theme 11) and 'Personal Orientation' (Theme 7) were rarely identified by taking a positivist stance alone. Having panellists from different disciplinary backgrounds significantly enriched the scope and comprehensiveness of the data analysis, assisted in triangulating findings and enhanced the robustness of any commonalities that were identified.

As with any, particularly short term, research project, there are limitations to our findings. Firstly the generalisability of the work, although likely given the comprehensiveness of the sampling and the data analysis, has not been tested. While Greater Western Sydney includes the full range of primary, secondary and tertiary care services in a large outer metropolitan area, it does not include rural and remote settings. Secondly, although each dataset has great depth and comprehensiveness, the sample does not cover every possible permutation of professions and settings where clinical placements occur. Sites which were more difficult to sample were private practice and acute care settings. However, the range of settings and professions sampled was sufficiently broad (see Table 4) to sample each type of setting at least once.

One of the new findings of this project was the documentation of the differences in private practice settings which impact on WBA. While it might be assumed that the fee structure and time sensitive nature of private practice services and expectations of patients might decrease the capacity for WBA, other factors, such as the flexibility to work outside employment award structures, the ability to direct non-clinical staff to perform tasks to support assessment and to flexibly schedule patients around assessments were found to facilitate WBA in this study. Further work in private practice settings and other health professions (for example dentists, paramedics, pharmacists) would usefully test these findings and the model.

Thirdly, while the framework has made explicit the commonalities between the sampled professions – differences did emerge, particularly in the format of assessments, which are likely to reflect different philosophies of assessment. For example medical assessors were more likely to treat formative assessments as high stakes discrete events, emphasising reproducibility as a marker of validity and reliability, whereas for other health professions, the model of formative assessment was more continuous and dependent on one to one interactions between assessor and student over time.

Fourthly, for ethical and access reasons, only formative assessments were sampled. While most learning should occur in formative assessments, this is dependent on the quality of feedback and the expertise of the assessor in giving feedback. As all the assessors were selected for their expertise, less experienced supervisors, may, for example, view setting up assessment as being more burdensome. However, it was found that all assessors perceive giving negative feedback or dealing with struggling students and associated report writing as contributing very significantly to workload.

Despite these limitations, the rigour and comprehensiveness of the methodology and the real world evidence based nature of the findings could have real practical impact. This impact may be demonstrated by triangulating the findings against other resources and theoretical frameworks, such as those below.

Relationship of Findings to HWA Clinical Supervisor Resources

As anticipated in the original funding proposal, results from this project have provided a robust and sound evidence base for key resources developed for clinical supervisors by Health Workforce Australia.

In the following section the outcomes of the current study are mapped against two Health Workforce Australia (HWA) supervision frameworks and resources:

1. HWA National Clinical Supervision Support Framework (July 2011) [19].
2. HWA National Clinical Supervision Competency Resource (Validation Edition, May 2013) [20].

HWA National Clinical Supervision Support Framework (2011) [19]

The principles of the National Clinical Supervision Support Framework 'informs and underpins projects and activities undertaken as part of the Clinical Supervision Support Program (CSSP)' (HWA 2011). The outcomes from this study were compared to the three key focus areas – (1) Clarity, (2) Quality and (3) Culture and represented in Table 6.

Table 6. Guidance principles – three focus areas

Focus Area Descriptor	Definition [19]	Current study alignment (theme)
1. Clarity:	The roles and responsibilities of all participants involved in the clinical supervision process should be clearly stated, communicated and documented as appropriate.	The roles and tasks associated with the role of clinical supervisor were documented, particularly with respect to workload associated with assessment of student competence. The following themes pertain to this key focus area: *Theme 1. Planning/Organising* *Theme 2. Documentation* *Theme 3. Feedback* *Theme 4. Communication* *Theme 5. Observation/Decision making* *Theme 10. Student characteristics* *Theme 11. Patient characteristics*
2. Quality	Consists of the subcomponents of patient care, clinical supervisor knowledge and skills, education program attributes, and preparation and support. In this project, we detailed information regarding clinical supervisor knowledge and skills, in particular as it relates to the	This study makes a significant contribution to the quality area of the National Clinical Support Framework, particularly with respect to the themes that were identified in this study: *Theme 1. Planning/Organising*

	workload of assessment; and the preparation and support that is provided to and used by clinical supervisors across a range of health processions.	*Theme 6. Acquisition/Training* *Theme 9. Expertise*
3. Culture	Consists of organisations, resources, relationships, learning environment and recognition.	The following themes were identified in this study which justify the culture domain in clinical supervision: *Theme 5. Observation/Decision making* *Theme 7. Personal orientation* *Theme 8. System/Structure*

The outcomes from this study aligns with the key focus areas (clarity, quality and culture) and clearly identifies the:

1. high standards of clinical supervisors and expertise,
2. commitment to provide quality education to health students,
3. increased and improved clinical provision, especially in the public / hospital environments,
4. need to provide continued education and training for health professionals,
5. need to support existing teaching capacity and time to maintain current clinical supervision from the health sector and the institutes, and
6. need to acknowledge supervisors, for their expertise and commitment in educating health students, from the health sector and institutes.

HWA National Clinical Supervision Competency Resource (Validation Edition, May 2013) [20]

The aim of the National Clinical Supervision Competency Resource is to "support the continuation and further development of a high quality and sustainable clinical workforce across all settings, to meet the current and future challenges of developing competent health practitioners for the Australian health system" (HWA 2013).

This resource consists of three domains:
1) Clinical supervision;
2) Safety and quality in clinical supervision; and
3) Organisation.

The current study provides evidence to support two (clinical supervision and organisation) of the three domains as outlined in Table 7. It highlights the commonalities across a diverse range of health professions and teaching environments in regards to:

1. interprofessional communication exhibited in the health setting (staff and students) and institutionally,
2. specific goals / learning outcomes to achieve safe, effective and competent patient care,
3. approaches by supervisors to learning and teach (feedback skills such as assessment observation, discussing and imparting knowledge),
4. the ability of supervisors to reflect and improve their personal and professional characteristics to enhance student learning,
5. identification and understanding the student learning outcomes and planning for inconsistencies in student learning levels, and
6. monitoring and modifying workplace learning in a timely fashion within the workplace.

Table 7. Clinical Supervision Competency Activity Domains

Domain title [20]	Descriptor: Competency Element [20]	Current study alignment (theme)
Domain 1 - Clinical supervision		
1.1 Prepare and plan	1.1.1 Clarification of roles and the supervisory relationship	Evidence to support this performance category was gained from: - *Theme 4. Communication*
	1.1.2 Clarification of learning outcomes	Evidence to support this performance category was gained from: - *Theme 4. Communication*
1.2 Facilitating learning	1.2.1 Experiential learning	Evidence to support this performance category was gained from: - *Theme 1. Planning/Organising* - *Theme 10. Student characteristics* - *Theme 11. Patient characteristics*
	1.2.2 Feedback	Evidence to support this performance category was gained from: - *Theme 3. Feedback*

		- Theme 4. Communication
	1.2.3 Reflection (personal and profession)	Evidence to support this performance category was gained from: *- Theme 4. Communication* *- Theme 9. Expertise*
	1.2.4 Formative assessment	Evidence to support this performance category was gained from: *- Theme 2. Documentation* *- Theme 3. Feedback* *- Theme 4. Communication* *- Theme 5. Observation/Decision-making* *- Theme 9. Expertise*
	1.2.5 Summative assessment	Evidence to support this performance category was gained from: *- Theme 2. Documentation* *- Theme 3. Feedback* *- Theme 4. Communication* *- Theme 5. Observation/Decision-making* *- Theme 9. Expertise*
1.3 Problem solve	1.3.1 Problem identification and prevention	Evidence to support this performance category was gained from: *- Theme 4. Communication* *- Theme 5. Observation/Decision-making* *- Theme 9. Expertise*

	1.3.2 Management of performance issues.	Evidence to support this performance category was gained from: - *Theme 4. Communication* - *Theme 5. Observation/Decision-making* - *Theme 3. Feedback*
1.4 Communication	1.4.1 Workplace communication	Evidence to support this performance category was gained from: - *Theme 4. Communication*
	1.4.2 Managing conflicts	Evidence to support this performance category was gained from: - *Theme 4. Communication*
Domain 3: Organisation		
3.1 Integration of supervision and learning activities in clinical practice		Evidence to support this performance category was gained from: - *Theme 1. Planning/Organising* - *Theme 8. System/Structure* - *Theme 10. Student characteristics* - *Theme 11. Patient characteristics*
3.2 Organisational skills/time management		Evidence to support this performance category was gained from: - *Theme 1. Planning/Organising* - *Theme 6. Acquisition/Training* - *Theme 8. System/Structure*

5. Conclusions

Despite increasing need for workplace based assessments (WBA) in the health professions, little empirical research has been conducted on how WBA is actually performed and its impact on healthcare settings where patient care is paramount. The evidence for the impact of WBA on the workload of clinical supervisors whose primary responsibility is to deliver patient care has not previously been documented through direct observation.

This project thus examined the workload of conducting WBA for clinical supervisors who must combine teaching with their clinical responsibilities. Observational data were collected from medicine, nursing, physiotherapy, occupational therapy and podiatry health professions, from the range of settings where students from these professions could be placed, including private practices, and acute care inpatient hospital wards. A bank of 25 datasets of WBA was created, with each dataset including video recordings and field notes of actual assessments conducted by experienced clinical supervisors in clinical settings, audio interviews using video triggered recall to document how supervisors make judgements about student competence, and interviews triangulating the workload impact of conducting WBA.

These datasets were then iteratively reviewed, analysed and re-reviewed by an expert interdisciplinary panel with members of the sampled health professions to provide "insider" and "outsider" perspectives on the data using a modified Delphi technique.

Within a brief time period, the project team delivered the following outcomes:
- Development and implementation of a rigorous methodology to unlock the "black box" of WBA and illuminate how supervisors perceive the workload of assessment
- Development of an empirical or evidence based model for the workload of assessment as perceived by experienced supervisors
- Creation of a repository of WBA datasets

In addition, findings which add to what is already known about WBA include:
- Identification of commonalities between different health professions in WBA
- Documentation of the differences between private practice and public health settings which impact on WBA

The project has provided evidence to support the applicability of the HWA Clinical Supervision Frameworks. Potential implications and recommendations from the project findings include:
- The development of targeted improvements to existing WBA formats and procedures so that WBA is more feasible and satisfying for clinicians. In this study, the most highly ranked themes in terms of impact on perceived workload were Preparation/Planning and Documentation. A large proportion of the workload associated with these activities could conceivably be conducted by professional or administrative staff, leaving potentially more time for activities such as 'Observation and Feedback' which do require clinical supervisor expertise. An example from the study is the ability of supervisors in private practice settings to direct receptionist staff to perform administrative tasks related to assessment.

- Using the descriptors in the workload model to evaluate and potentially quantify WBA activities to support an equitable distribution of clinical supervision and assessment workload and to develop metrics for quality assessments which are meaningful to expert assessors.

The project has successfully extended and applied a robust research methodology, sampling from a broad range of professions and health care settings, to provide strong evidence to support the project outcomes. Further research work on the complex activities of WBA should focus on extending knowledge through further framework and theory development and by testing the transferability of findings to design, implement and evaluate interventions grounded in real world practice.

7. Appendices

Appendix 1 Early Conceptual Framework Model
Appendix 2 Themes & Detailed descriptions
Appendix 3 Quotes illustrating each Theme

8. References

1. Norcini J: **ABC of learning and teaching in medicine. Work based assessment. Clinical review**. *BMJ,* 2003, 326.
2. Miller G: **The Assessment of Clinical Skills/Competence/Performance.** *Academic Medicine*, 1990, **65**(9):S63-S67.
3. Nursing and Midwifery Board of Australia (NMBA), **Registered nurse competency standards - (2006) (Updated 29 August 2013)**.
http://www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Codes-Guidelines.aspx#competencystandards.
4. Assessment of Physiotherapy Practice (APP).
http://ajp.physiotherapy.asn.au/AJP/vol_57/4/Dalton.pdf, 2011.
5. Australian and New Zealand Podiatry Accreditation Council (ANZPAC), **Podiatry Competency Standards for Australia and New Zealand (2009) (Updated 2012)**.
http://www.anzpac.org.au/accreditation.html.
6. Cochran Ward E, Kwan J, Garlan K, Bassett E, Klein L: **'To teach or not to teach?' Factors that motivate and constrain Australian emergency medicine physicians to teach medical students.** *Emerg Med Australia*, 2013, **25**(4):353-358.
7. Govaerts M, van der Vleuten CP: **Validity in work-based assessment: expanding our horizons.** *Med Educ*, 2013 Dec, **47**(12):1164-74.
8. Oates R, Goulston K: **The hiddent cost of medical student education: an** exploratory study. Australian Health Review, 2013, 37:185-188.
9. Pope C: **Conducting ethnography in medical settings**. *Med Educ*, 2005. **39**(12):1180-7.
10. The A M, Hak T, Koeter G, van der Wal G: **Collusion in doctor-patient communication about imminent death: an   ethnographic study**. *Western Journal of Medicine*, 2001, **174**(4):247-253.
11. Iedema R, Long D, Forsyth R, Lee B.B: **Visibilising clinical work: Video ethnography in the   contemporary hospital**. *Health Sociology Review*, 2006, **15**(2):156-168.
12. Lid T.G, Eraker R, Malterud K: **"I recognise myself in that situation..." Using photographs   to encourage reflection in general practitioners**. *BMJ*, 2004, 329(7480):1488-90.
13. Carroll K, Iedema R, Kerridge R: **Reshaping ICU ward round practices using video-reflexive   ethnography.** *Qual Health Res*, 2008, **18**(3):380-90.
14. O'Reilly M, Parker N, Hutchby I: **Ongoing processes of managing consent: the empirical   ethics of using video-recording in clinical practice and research**. *Clinical Ethics*, 2011, **6**(4):179-185.
15. South Western Sydney Local Health District Strategic Priorities In Health Care Delivery to 2021. Leading Care, Healthier Communities, Draft Version 13, http://www.swslhd.nsw.gov.au/pdfs/SPHD.pdf.
16. Shanteau J: **Competence in Experts: The Role of Task Characteristic**s. *Organizational Behavior &   Human Decision Processes*, 1992, **53**:252-66266.

17. Creswell JW. *Research design: qualitative, quantitative, and mixed methods approaches*. 3rd edition. Los Angeles; London SAGE; 2009.

18. Keeney S, Hassan F, McKenna HP: **A critical review of the Delphi technique as a research methodology for nursing**. *Int J Nurs Stud* 2001, 38(2):195–200.

19. Health Workforce Australia (2011) *National Clinical Supervision Support Framework*. *Health Workforce Australia: Adelaide.* (http://www.hwa.gov.au/sites/uploads/hwa-national-clinical-supervision-support-framework-201110.pdf)

20. Health Workforce Australia (2013) *National Clinical Supervision Competency Resource – Validation Edition.* Health Workforce Australia: Adelaide. (https://www.hwa.gov.au/sites/uploads/HWA-National-Clinical-Supervision-Competency-Resource-VE-201305.pdf)