14th June 2013

Mr Ken Whelan
DDG
System Purchasing and Performance

Dear Mr Whelan

Please find attached a final report on the Ultrasound Training for Emergency Clinicians. This project has been running for four years and has established a unique online educational and credentialing package for the basic training in bedside Ultrasound.

During this time almost 500 Emergency Clinicians (Doctors and Nurses) have received training in this technique that has been shown to reduce the time and cost of treatment, reduce complications and to expedite life saving decisions in the Emergency Department.

The funding for this project will cease this financial year.

The report details the process and benefits of this project and the large benefits in maintaining this educational resource. I commend it to you and hope we can find a way to keep the UTEC project functioning in 2013/2014.

I would be pleased to assist with any additional information as required

Sincerely

A/Prof Richard Cracknell
Chair UTEC Steering Committee
Critical Care Stream Director SWSLHD
Richard.Cracknell@sswahs.nsw.gov.au

Cc Dr Sally McCarthy, Director ECI

Ultrasound Training for Emergency Clinicians Project

Executive Summary

In 2009 the National Partnerships Agreement provided funds for jurisdictions aimed at 'Taking Pressure off Public Hospitals (ED)'. Part of this funding was earmarked for Emergency Department projects that were prioritized and endorsed by the Ministerial Taskforce for Emergency Care.

The decision was made to support the 'Ultrasound Training for Emergency Clinicians' project for a 4 year period. This project aimed to develop a program which would provide training and credentialing for Emergency Clinicians in several proven 'Point of Care' (bedside) Ultrasound modalities. These were;

- Focused Abdominal Sonography in Trauma (FAST)
- Assessment of Suspected Ruptured Abdominal Aortic Aneurysm (AAA)
- Identification of Pelvic Free Fluid in Suspected Ruptured Ectopic Pregnancy
- Ultrasound-Guided Vascular Access

Emergency Point of Care Ultrasound has been shown to provide many benefits to patients and the Health system, which include:

- Reduced costs for the Health system as clinical decisions can be made at the patient's bedside without waiting for formal radiological testing to make these decisions.
- Reduced length of stay in Emergency Departments as early decisions can be made on the need for admission or discharge disposition.
- Aiding clinicians to make rapid diagnostic assessments in time critical presentations such as Trauma, ectopic pregnancy or ruptured AAA.
- Reduced adverse events for patients who require central venous access as it provides a superior method of achieving the access with fewer complications.

Emergency bedside ultrasound is endorsed by the Australasian College for Emergency Medicine, the Australasian Society for Ultrasound in Medicine, and international bodies such as the American College of Emergency Physicians.

Prior to the UTEC project, training in bedside ultrasound was only provided by private organizations at significant cost (some are $3350 for the basic course). The participants were also left to organize ongoing training and credentialing of their scans by

themselves. This was difficult in large metropolitan hospitals and impossible in more remote locations.

The key components of this four year project was to develop and provide the didactic teaching via e-learning (online through the NSW Health GEM platform), provide face to face skills training in ultrasound (workshop format) and then provide the ability to review and credential scans remotely through image uploads (NSW Health GEM platform). The UTEC project is the only system in Australia where the teaching and credentialing can be provided in an asynchronous online environment. The requirement for face to face teaching is limited to a single skills session that occurs in the middle of the training program. The ability to access the training remotely makes it available to Emergency clinician across the state.

A project officer and twenty hours of specialist input for training and credentialing each week staff the project. It has been supported by Liverpool Emergency Department, the host site, who have provided leadership through the steering committee, access to their clinical environment for training, and additional secretarial support.

Over the 4 years of the project, almost 500 Emergency Clinicians have received initial training in bedside Ultrasound and have either completed or are participating in the ongoing credentialing process. The courses have received strong positive feedback and there is ongoing demand for training into the future. The indications for bedside Ultrasound in Emergency continue to grow and the demand for timely care has never been higher.

The funding for this project finishes at the end of 2012/13 financial year. This report details several options to continue the UTEC training in NSW. The project can continue in its current form with projected annual costs of $285,000. This is the preferred option and there is value in keeping the project attached to a clinical department with expertise in this area. Alternate options are provided with affiliation of the project to the Agency for Clinical Innovation (ACI) or the Health Education and Training Institute (HETI) and combining the project officer role with existing projects.

Without additional funding the project will cease to function on 30th June 2013. Options for investigation to support continuation of the program include:

- Commitment from SWSLHD to provide funding to support a further 12 months of the program at Liverpool Hospital
- Provision of required funding by Ministry of Health to continue the program in its current form at Liverpool Hospital.

- Provision of required funding for the program to be managed by the Emergency Care Institute
- Discussion with HETI about the potential for provision of funding and housing of the program with the Emergency Medicine Network Training Program

I believe this is an excellent training program and the online resources represents an existing valuable investment by the Ministry of Health. I recommend to the Ministry that we take the opportunity to continue to support Emergency Clinicians across our state through this training.

A/Prof Richard Cracknell
Chair UTEC Steering Committee
Critical Care Stream Director, SWSLHD
Richard.Cracknell@sswahs.nsw.gov.au

INTRODUCTION

Purpose of the Plan

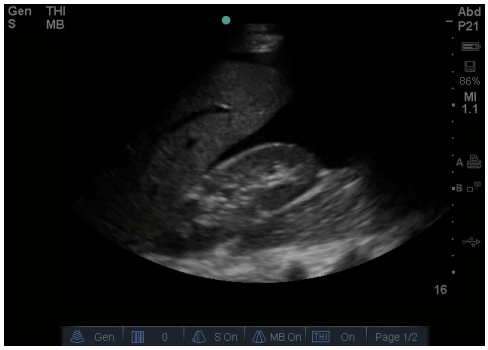
To develop a standardized emergency ultrasound training and credentialing program in FAST, AAA, the identification of pelvic free fluid in suspected ruptured ectopic pregnancy and ultrasound-guided vascular access, for NSW public emergency departments.

Background Information about the Project

In 2009 the National Partnerships Agreement provided funds under the heading 'Taking Pressure off Public Hospitals'. Part of this funding was earmarked for Emergency Department projects that were prioritized and endorsed by the Ministerial Taskforce for Emergency Care.

The decision was made to support the 'Ultrasound Training for Emergency Clinicians' project for a 4 year period. This project aimed to develop a program which would. increase the availability of Emergency clinicians (Medical and Nursing) who were able to provide bedside Ultrasound in several proven modalities.

Ultrasound provides critical information to emergency clinicians at the bedside by providing both a rapid and non-invasive diagnostic tool and providing guidance for procedural interventions. The use of ultrasound as a diagnostic tool by emergency clinicians has been shown to be both sensitive and accurate. In addition a number of studies have demonstrated that the provision of point-of-care ultrasound in an emergency department deceases time to diagnosis with improved patient outcomes, lengths of stay in the emergency department, and complications and lengths of stay for admitted patients.



*Ultrasound showing blood in the abdomen of a trauma patient

In the USA the Accreditation Council for Graduate Medical Education (ACGME) mandates procedural competency for all emergency medicine residents in emergency ultrasound as it is considered 'a skill integral to the practice of emergency medicine' as defined by the 2007 *Model of Clinical Practice of Emergency Medicine.* In The UK the College of Emergency Medicine has developed a Certificate in Emergency Ultrasound and as of 2010 training and assessment in ultrasound is a part of the emergency medicine training curriculum. In 1999 the Australasian

College for Emergency Medicine (ACEM) published a policy on The Use of Bedside Ultrasound by Emergency Physicians that supports the use of ultrasound by emergency physicians for at least the following indications: traumatic haemoperitoneum, abdominal aortic aneurysms, pericardial fluid, ectopic pregnancy, vascular access, and evaluation of renal and biliary tract disease. In the following year ACEM published a policy on Credentialing for ED Ultrasonography: Trauma Examination and Suspected AAA, but fell short of actually offering a credentialing program through the College.

Primary applications can be considered as those that identify specific life threatening conditions in which ultrasound is recognized as a standard imaging modality and ultrasound-guided procedures such as vascular access that may be time critical.

Prior to the project, Ultrasound training was only available through various private providers across NSW at significant cost. These courses provided the basic training but the trainee was then left to find or create their own ongoing supervised practice that is essential to ensure acceptable standards. The ACEM and Australasian Society for Ultrasound in Medicine had published requirements for number of scans required to complete the initial credentialing for bedside ultrasound. To get these scans reviewed was difficult to achieve in large ED's and almost impossible in smaller, more remote centers.

The aim of this project was to develop a standardized training and credentialing program in emergency ultrasound for NSW emergency medicine specialists, trainees, career medical officers and senior nurses. A key element to the project was this was to be delivered, as much as possible, through the on-line environment, making it available to Emergency Clinicians across the whole of NSW. The program was to include the core primary indications:

- Focused Abdominal Sonography in Trauma (FAST)
- Assessment of Suspected Ruptured Abdominal Aortic Aneurysm (AAA)
- Identification of Pelvic Free Fluid (Blood) in Suspected Ruptured Ectopic Pregnancy
- Ultrasound-Guided Vascular Access

The practical experience for competency was designed to be consistent with the Australasian College for Emergency Medicine's Policy on 'Credentialing for ED Ultrasonography: Trauma and Suspected AAA'

Project Approach

The aim was to develop a standardised emergency ultrasound training and credentialing program that can be run and managed at a local level. This was delivered using a combination of online, asynchronous e-learning tools, practical workshops together with electronically uploaded, and remotely reviewed, training scans. Asynchronous learning is defined as a student centered teaching method that uses online learning resources to facilitate information sharing

outside the constraints of time. In practical terms this means the student access the information in their own time and at their own pace.

As an important part of this the approach was to have an efficient program that could be locally devolved and run as a 'Train the Trainer' program by training local emergency physicians to deliver the educational content and provide local supervision and credentialing.

It was recognised that there would be a number of emergency physicians, trainees and possibly senior nursing staff who have already received formal training and satisfied the credentialing requirements in terms of experience so as part of this initiative a mechanism to provide accreditation to individual practitioners in terms of recognition of prior training and experience was also created.

Meeting this approach involved:

1. Creating a project structure based at Liverpool Hospital Emergency Department with a steering committee. The steering committee during the initial phases of the project contained representatives from Rural as well as Metropolitan Emergency Departments and also from the DoH.

2. Developing a training curriculum and defined scope and standards of practice

3. Developing an e-learning teaching tool to deliver lecture and didactic content and an image library as well as provide for an online credentialing tool.

4. Developing a workshop content and structure to provide initial practical training in each of the described modalities and run a series of workshops both out of Liverpool Hospital and local departments

5. Developing a Recognition of Prior Learning package that recognised those with adequate previous training and experience

6. Identifying suitable local (hospital) and regional trainers who were willing to take on the responsibility for managing the training and support for their local department or region.

GOALS AND OBJECTIVES

Goal

For NSW Health Emergency Departments to be able to provide extended hours of point-of-care emergency ultrasound to identify the defined life threatening conditions in which ultrasound is recognised as a standard imaging modality, and ultrasound-guided procedures such as vascular access that may be time critical

Objective

To decrease the time to diagnosis and intervention in patients with time critical presentations with demonstrated improved outcomes for those patient groups.

Project Goals and Objectives

To establish a basic standardised and quantifiable level of skill in point-of-care emergency ultrasound for NSW emergency departments

Measurable Benefits

The measureable benefits include decreased time to diagnosis in patients with the defined time critical presentations with associated decreased time to definitive intervention with associated improved outcomes, survival rates and decreased complications.

The use of ultrasound by emergency clinicians is distinctly different from that of other specialties. It is usually performed at the bedside simultaneously with the clinical examination, resuscitation or procedure. Typically the bedside examination performed by the emergency clinician is designed to answer one or two specific clinical questions and completed within a few minutes or to guide a procedural intervention. Emergency ultrasound is performed, interpreted and integrated rapidly into patient management and decision making regarding disposition.

The primary applications included within the scope of this project are focused on those that identify specific life threatening conditions or ultrasound-guided procedures such as vascular access that may be time critical.

In the context of trauma, physical examination of the abdomen is often equivocal for intra-abdominal injury (Schurink et al: 204 consecutive patients with possible blunt abdominal trauma: 45% equivocal examination increasing up to 84% in those with lower rib fractures).

In trauma the use of focused bedside ultrasound has been shown to be an accurate screening tool in abdominal trauma, it is rapid, non-invasive, repeatable, portable and does not involve radiation or contrast.

The Sonography Outcomes Assessment Program (SOAP)-1 Trial published in Annals of Emergency Medicine in 2006 (Melniker et al) demonstrated the following positive outcomes associated with the use of FAST ultrasound:

1. Less time to operative intervention (57 minutes versus 166 minutes)

2. Shorter hospital lengths of stay (6.2 days versus 10.2 days)

3. Fewer complication rates

4. Lower likelihood of undergoing a CT examination

Plummer et al reported the benefits of introducing bedside echocardiography by emergency physicians in the clinical context of penetrating cardiac injuries (Ann Emerg Med 1992). Plummer reported on 49 patients presenting with penetrating cardiac injury over a 10-year period and compared the outcomes prior to the introduction of emergency ultrasound to those after its introduction. Comparing the retrospective control group, the use of bedside echocardiography significantly reduced the time to diagnosis and disposition to the operating theatre from 42.4 +/- 21.7 minutes to 15.5 +/- 11.4 minutes. This was associated with an improved survival rate from 57.1% to 100%.

In suspected ruptured abdominal aortic aneurysm the use of bedside ultrasound has been associated with decreased time to diagnosis and improved outcome. With bedside ultrasound time to diagnosis has been shown to be as low as 5.4 minutes as compared with 83 minutes when traditional diagnostic criteria are used (Acad Emerg Med 1998).

Central venous access is associated with a number of complications including excessive bleeding, inadvertent arterial puncture, vessel laceration, pneumothrax and haemothorax. With the traditional 'landmark' based approach to central access a 20% failure rate with a 10% complication rate has been reported that is even higher in the emergency setting. There are a number of studies, which demonstrate a higher success rate and lower complication rate with ultrasound-guided vascular access. The largest study to date published in Critical Care in 2006 by Karakitsos et al was a prospective trial of 900 patients comparing the traditional landmark technique with ultrasound-guidance for central access. Key benefits identified included:

1. Reduction in needle puncture time
2. Increased overall success rate (100% vs 94%)
3. Reduction in carotid puncture (1% vs 11%)
4. Reduction in carotid haematoma (0.4% vs 8.4%)
5. Reduction in haemothorax (0% vs 1.7%)
6. Decreased incidence of pneumothorax (0% vs 2.4%)
7. Reduction in catheter related infection (10% vs 16%)

In the USA the Department of Health and Human Services Agency for Healthcare Research and Quality Report published guidelines recommending the use of ultrasound to guide central venous access in 2001. The following year in the UK the National Institute of Clinical Excellence (NICE) published similar guidelines recommending the use of ultrasound.

Ultrasound can also be used to guide difficult peripheral vascular access and ultrasound-guided basilic vein cannulation has been shown to be very successful in the emergency department setting in whom it was difficult to obtain other peripheral access.

From the outset the UTEC project was focused around implementing the proven benefits associated with bedside Ultrasound. It was, and is not, a research project. As such the data collection has been targeted to the development and implementation of the training packages as described here. The further impact of the bedside Ultrasound that has resulted from this training has not been measured.

SCOPING THE PROJECT

Scope Definition

Develop and deliver a point-of-care emergency ultrasound training and credentialing program covering FAST, AAA, identification of pelvic free fluid in the context of a suspected ruptured ectopic pregnancy and Ultrasound-Guided Vascular Access for NSW Emergency Departments.

In/Out of Scope

In addition to the items that are in scope, note the items that are specifically excluded from the project scope.

In	Out
1. NSW Emergency Department Clinicians including specialists, trainees, CMOs, VMO GPs with a significant proportion of work in a public ED, senior nursing staff 2. Point-of-Care Emergency Ultrasound for FAST, AAA, Pelvic Free Fluid in Suspected Ruptured Ectopic Pregnancy, Ultrasound-Guided Vascular Access	1. Clinicians from non-ED specialties 2. Applications for Point-of-Care Emergency Ultrasound beyond for the core critical indications outlined as in scope

Project Completion Criteria

Developed point-of-care emergency ultrasound program with a recognised group of local hospital and regional trainers so that training can be devolved to individual institutions.

Assumptions

All departments / staff undergoing training have direct access to a suitable dedicated ultrasound system in the emergency department.

Participants will commit to completing the credentialing requirements

Departments willing to take on responsibility for on-going training with an identified local trainer

Local hospital support

At the same time as the UTEC project commenced a state wide equipment upgrade and purchase for NSW Emergency Departments was also being rolled out from the (previously) Department of Health. One of the key purchases were 30 Ultrasound units for Emergency Departments across NSW. The specialists from the UTEC project contributed to setting the standards for the machine specifications during the tendering process. These units were a valuable asset during the rollout of UTEC as they were a common element during the training and the credentialing back in the host departments.

Constraints

- The lack of direct access to suitable, dedicated ultrasound systems in some NSW EDs represented a significant obstacle to gaining appropriate experience and completing credentialing requirements.

- Lack of access to suitable local supervisors/trainers. This is resolved by identifying appropriate local and regional trainers to take on the responsibility for local training/supervision. Close follow up with the candidates and their local sponsors (usually Department Director) was essential during the project.

- Lack of local hospital support. Whilst there has been reluctance in certain quarters to support an extended range of clinical emergency ultrasound there is now widespread acceptance of the benefits of point-of-care ultrasound for the time critical presentations such as trauma with suspected intra-abdominal bleeding and suspected ruptured AAA and for ultrasound-guided procedures such as ultrasound-guided central venous access. Initially the reluctance was apparent but after consultation with concerned bodies the issues appear resolved and it is now widely accepted.

Key Project Dependencies

Suitable dedicated ultrasound systems are in place in NSW. They are being used for training and credentialing purposes.

Project Flexibility Matrix

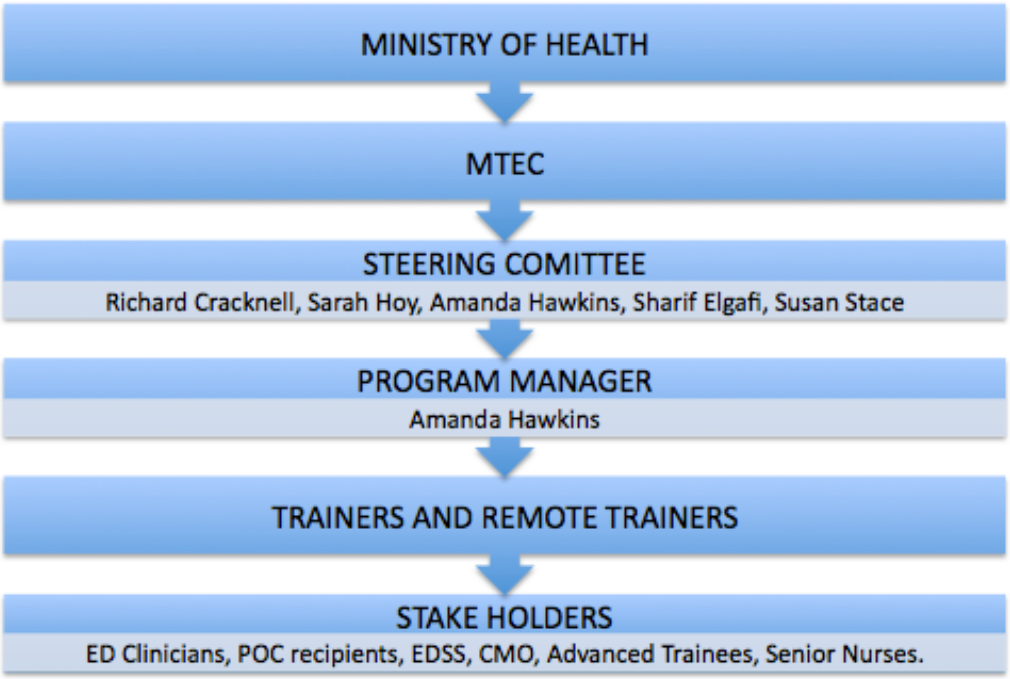
	Least Flexible	Moderately Flexible	Most Flexible
Schedule	Time frame and schedule for running first workshops	Time frame for developing an e-learning package to support training	Individual courses
Scope	FAST, AAA, Vascular Access, Ruptured Ectopic		
Budget	$500,000 per annum for 4 years		
Benefits	Well described and defined program with clearly identified end-points provided within budget	Recognition of Prior Learning	

GOVERNANCE & REPORTING

Roles & Responsibilities

Roles	Responsibilities
Steering Committee	To make decisions related to the project's success and mitigate any issues encountered.
Project Sponsor	Provide funding and direction
Process Owners	Provide input on goals and implementation
Program Manager	Ministry of Health. To oversee deliverables and provide overall support
Project Manager	To monitor the overall performance of the project mitigate any issues strive to meet key milestones of the project
Project Office	To provide training, support and supervision to participants and training sites

Governance Chart



Steering Committee

The original Steering Committee consisted of A/Prof Richard Cracknell (chair), Ms Sarah Hoy (DoH), Dr Andrew Haig (subject expert), Dr Trish Whelan (Rural Critical Care), Dr Stuart Watkins (education and training) and Ms Amanda Hawkins (project officer). The steering committee has gone through a number of member changes based on availability and the current members are listed in the matrix above.

PROJECT TEAM ROLES AND RESPONSIBILITIES

Project Team Member	Date	Role	Responsibility	Availability
Amanda Hawkins	March 2010 - present	Project Officer	Content development, communication and training.	Mon-Fri
Richard Cracknell	March 2010 - present	Director Liverpool ED/ Chair Steering C'ttee	Oversight to project	Mon-Fri
Sarah Hoy	March 2010 - present	NSW MoH Principal Policy Advisor, Emergency Access	Oversight to deliverables, Support to project officer	Mon-Fri
Andrew Haig	March 2010 – March 2012	Subject matter expert.	Content development and training	Mon-Fri
Stuart Watkins	March 2010- October 2011	Education and Training	Courses/Training/credentialing	20 hrs per week
Sharif Elgafi	June 2012 - present	Subject Matter expert.	Courses/Training/credentialing	10 hrs per week
Susan Stace	June 2012 - present	Trainer	Courses/Training/credentialling	10 hrs per week

PROJECT DELIVERABLES, SCHEDULING & MILESTONE

Key Milestones

1st Round Purchase of ultrasound machines delivered on site May 2010

Completion of Training Curriculum & Resources together with a Credentialing Process July 2010

2nd Round Purchase of ultrasound machines delivered on site August 2010

All equipment ordered and delivered September 2010

Commencement of Training Workshops with subsequent local credentialing pathways September 2010

First Credentialed participants completed December 2011

Gemstar website development June 2012

Development of an RPL package to be utilized across the state June 2012

Fully developed training / credentialing package with involvement of locally identified trainers December 2012

FINANCIAL MANAGEMENT – COSTS AND BENEFITS

Expense Group	**2009/10**	**2010/11**	**2011/12**	**2012/13**	**Projected per annum***
Equipment	$360,000				
Overheads (Travel, consumables, stationary & courses)		$20,000	$5,000	$5,000	$5,000
Staffing: Nursing	$95,000	$100,000	$100,000	$100,000	$100,000
Staffing: Medical	$130,000	$180,000	$180,000	$180,000	$180,000
Total Cost	**$360,000**	**$300,000**	**$285,000**	**$285,000**	**$285,000**

* Cost projections based on current setup. Discussed further at end of report.

PROJECT ASSETS

HP Color Laser Jet Printer (CP2025dn)

Blue phantom simulation Training Equipment (2 x Amniocentisis models, 2 x AAA models, 2 head torsos for IJ access, 2 x torsos for femoral access, 4 x branched vessel models, 4 arm models for peripheral access).

1 x Mac Book Computer 13”

1 x Mac Book Computer 15”

1 x NEC NP-410G LCD & Accessories

6 x Sonosite M Turbo Ultrasound Machines complete with 3 probes each.

PROJECT APPROACH

ACEM/ASUM Framework

In 1999, the Australasian College for Emergency Medicine (ACEM) published a policy on the use of bedside ultrasound by emergency clinicians that supports the use of ultrasound by emergency physicians for at least the following indications: traumatic haemoperitoneum, abdominal aortic aneurysms, pericardial fluid, ectopic pregnancy, vascular access, and evaluation of renal and biliary tract disease. In the following year ACEM published a policy on Credentialing for ED Ultrasonography: Trauma Examination and Suspected AAA, but fell short of actually offering a credentialing program through the College.

The Australian Society for Ultrasound Medicine (ASUM) also sets standards for clinician bedside ultrasound. They coordinate advanced ultrasound training through their CCCP and DDU programs but do not themselves provide the training or the credentialing.

UTEC is the only point of care ultrasound training course in Australia that provides both the ultrasound education and a supported credentialing package accessible to all participants across the state remotely.

Liverpool Emergency Department

Liverpool Hospital has a strong established ultrasound training background. Liverpool Emergency was unique in Australia in that they had a Director of Emergency Ultrasound on staff. The already existing training and support was developed further and evolved to the UTEC training currently provided. The didactic lectures were expanded on and set up to be line-learning modules hosted on the NSW Health Gem e-learning platform. These are interactive

learning modules on the core principles of point of care ultrasound. The credentialing support that was currently provided at Liverpool was also evolved into the on-line credentialing tool also hosted on the Gem platform. It was an easy transition for Liverpool Emergency Department to offer remote assistance to UTEC participants because the same point of care ultrasound training was already an established part of senior clinician training.

Stakeholder engagement and communications

Once the Gem platform was established the team started to promote the availability of the UTEC program. Email communication to departmental heads as well as regular follow up emails were sent. Telephone conversations were important with interested departments to establish a good contact person who could be a contact person at each site. The team promoted the project at events including:

- 2011 Medical Simulation Conference
- ACEM Annual Scientific Meetings
- ECI Emergency Forums

OUTCOMES
Phase One

For the first 18 months of the program the course content was delivered through a series of didactic lectures that were incorporated with the practical training session. This phase preceeded the development of the online packages.

The sites that were trained were:

Date	Department name	No Trained
22/4/10	Campbelltown	11
1/9/10	Bowral	8
7/9/10	Auburn	4
9/9/10	Mona vale	3
21/9/10	Lithgow	9
22/4/10	Campbelltown	14
2/10/10	Gosford	16
13/10/10	Shoalhaven	14
30/10/10	Batemans Bay	14
2/9/11	Nepean	12
18/10/11	Liverpool	10
22/12/12	Royal North Shore	11
25/5/11	Camden	12
31/5/11	Liverpool	9
6/12/11	Liverpool	11
TOTAL		158

During this initial training phase we were able to train a total of 158 participants, with a total of 9 completing the credentialing process. This training phase was quite arduous and it highlighted factors that limited our success on getting more people trained and credentialed in point of care ultrasound. Limiting factors included that the courses were often held on group education days, such as registrar teaching. This resulted in some attendees not being particularly interested in Ultrasound training. While there were some interested parties it was difficult to engage all participants and we found at this stage there was limited support from on site departmental managers to engage participants. The online elements of the program had not yet been developed and so the process of supported credentialing was also quite arduous. The on line credentialing became available from November/December 2010 which allowed for a more seamless approach to provide support and mark the submitted scans from the participants.

Phase Two

From February 2011 we began developing the content for the online e-learning component of the platform. A great deal of hours were spent not only developing the content but regularly meeting with Workstar to ensure the end product was of a high standard. The e-learning component was live from the second half of 2011. This changed the structure of the course significantly.

*Appendix 3.


With the advent of online content were able to complete the on line e-learning prior to a practical session with UTEC trainers. After consideration by the committee it was decided that we would screen applicants for the more motivated people who would engage in completing the training from around the state. Once those selected individuals had completed the on line learning we would then provide a series of practical training days, held at Liverpool Hospital or other hospitals to accommodate their practical session. Most participants were happy with this new approach. We were also able to offer participants a number of course dates so as they could pick a time convenient to them, rather than rely on the previous 'whole of department' training programs. This resulted in a mix of departmental and compilation (i.e. participants from various departments) training programs. If more than 8 people from an individual site had

finished the on line e-learning that we were able to provide the training at that location. The only two hospitals that accepted this option were Royal North Shore Hospital, with the support of Dr Justin Bowra, and Nepean Hospital, with the support of Dr Stuart Stapleton. These two sites went on to become the two regional train the trainer sites, which will be discussed shortly. The ability for participants to remotely complete e-learning and the much more structured way that we were able to provide supported credentialing enabled a much more efficient process for the UTEC team. This tighter selection process resulted in a group that was more enthusiastic about completing the training and credentialing. The selection was via an individual contract in addition to the indication of support that was required from their department director.

Since the inception of the Gem platform where the project has been functioning at full capacity we have 307 participants enrolled 288 participants currently in progress of being remotely credentialed and 24 completed participants. We have been able to include participants from 51 separate departments across the state. Details for each site trained.

Department	No Trained
Albury	1
Armidale	2
ASNSW	1
Auburn	1
Ballina	2
Bankstown	6
Bathurst	2
Bega	1
Belmont	1
Blacktown	1
Blue Mountains	3
Campbelltown	21
Canterbury	2
Coffs Harbour	1
Concord	1
Cooma	1
Dubbo	2
Gosford	2
Goulburn	1
John Hunter	15
Kempsey	1
Lismore	5
Lithgow	1
Liverpool	46
Macksville	2

Maitland	5
Manly	5
Mona vale	2
Moree	3
Murrumbidgee	2
Murwillumbah	1
Nelson Bay	3
Nepean	39
Orange	9
Port Macquarie	2
Prince of Wales	5
Royal North Shore	27
Royal Prince Alfred	1
Shellharbour	3
Shoalhaven	2
St George	18
St Vincent's	18
Sutherland	7
Sydney Kids	1
Sydney Hospital	4
Tamworth	1
Taree	1
Tomaree	1
Wagga Wagga	1
Westmead Adults	2
Wollongong	3
	288

TRAIN THE TRAINER SITES

As is evident in the table of trained participants, a number of sites have emerged as train the trainer sites. At this stage Nepean, under the supervision of Dr Stuart Stapleton, Royal North Shore, under the supervision of Dr Justin Bowra and Campbelltown, under the supervision of Liverpool Hospital. Orange Base Hospital is now under the supervision of Dr Brian Burns and Dr Fergal McCourt from Liverpool Hospital and Liverpool Hospital under the supervision of the UTEC team. There is potential that more train the trainer sites will be identified as the project evolves. At these sites, UTEC provides the equipment (Ultrasound machines, Ultrasound Phantoms, etc) and sends a project team member to assist with the course. At sites such as Nepean and Royal North Shore hospitals, UTEC have integrated with a pre existing training program to make it more streamlined. It is advantageous to the site because the participants

have access to the on-line elearning and credentialing. These sites overall credentialing and support is managed by the lead from the department with support from UTEC as required.

RECOGNITION OF PRIOR LEARNING (RPL)

A recognition of prior learning package was developed in line with the standards similar to UTEC. Participant need to show evidence of attending a recognized course and completing credentialing requirement equivalent to the requirements set out by UTEC. At this stage 28 participants have been accepted by the RPL pathway.

RISKS AND ISSUES MANAGEMENT

1. Lack of suitable dedicated ultrasound machines

At the outset of the project the Equipment Project purchased multiple ultrasound machines and distributed them throughout many NSW Emergency departments. There were however; a number of departments that were unable to participate because of the lack of a dedicated suitable ultrasound machine as it was viewed that they would have difficulty completing the credentialing requirements. The UTEC team could not easily resolve this.

The UTEC team liaised with the various Ultrasound providers to see if it were possible to purchase additional parts/software for the existing machines to allow the machine to be able to record scans. In all but three or four machines this issue was resolved. Some departments were in a position to either loan an ultrasound machine from another department or were able to purchase a machine. For those departments that were unable to have this issue resolved or did not have a machine at all, training was offered within Liverpool Emergency Department 1:1 with a member of the UTEC team in an attempt to get the credentialing requirement complete.

Two UTEC ultrasound machines were loaned to departments in metropolitan Sydney with a high number of registered participants. Both Nepean and Campbelltown have ultrasound machines belonging to UTEC to support participants as both have a high level of support from senior medical staff and a high number of participants working there. These machines can be reallocated at any time for the purposes of training or if the need is greater at an alternative site.

2. Radiology Support

Initially some Emergency Departments encountered resistance from their Radiology Departments. Some Radiology Departments were reluctant to participate as they felt that training point of care ultrasound was unsafe and encroached onto their specialty. This issue was resolved through communicating the intent of the program with the departments and providing additional direct support to participants. Communication with the Radiology Departments as to

the purpose of the ultrasound training and its relationship to formal ultrasound addressed many issues. In some cases we were able to arrange for the participants to go to the Radiology Departments to get training from sonographers for the procedural skills needed in Ultrasound.

3. Communication

It was initially difficult to promote the project. Emails were sent to the heads of department with the advertising brochure attached, but this did not always filter down to potential participants. Also it seemed that the emails were not being read as they were being sent from an unknown source and the heads of department were likely to receive many emails daily so needed to prioritise what their time was spent reading.

To mitigate this risk emails were then sent centrally from the Department/Ministry of Health. After this time there was a greater response in the interest towards the UTEC project, we attended courses and conferences that had emergency delegates in attendance to promote the project and offer training. This also highlighted the training to Emergency Departments around the state. Word of mouth was probably the most powerful factor in generating interest. It was found that a large number of participants were attending because the project had been referred to them by a previous participant.

It took some time for the interest in the project to evolve. The UTEC team only fully started promoting the project once the gem platform was fully functional in mid 2011, since then interest has been growing at a steady rate.

4. Credentialing

Historically, even prior to the inception of UTEC at Liverpool Emergency Department, it was difficult to get compliance with the credentialing requirements. Australia, unlike other countries, does not have compulsory credentialing requirement or an ongoing requirement for credentialed participants to prove currency. This deficit was also not a priority for a large number of departmental managers.

This undermined the drive to complete the credentialing requirements. In the first phase we developed up a contract for each participant to read and sign. This contract stated that each participant would commit to the credentialing requirement of the course. Despite this contract we still had limited compliance. We also attempted to engage the managers of the department to take some leadership with the trained participants, also with limited success. We had to look at a way to identify participants who were particularly interested in the course and willing to commit to the requirement for credentialing.
The delivery method we were using at the time seemed to be an issue that could be looked at. At the initial training phase we would contact departments looking for them to provide a minimum number of 12 interested participants. The UTEC team would then travel to this

department and provide training to the clinicians at that site. The problem was that there were only a few participants who were particularly motivated, but the rest of the people were there as a part of the department's scheduled education.

The decision was made to modify this approach and provide training on a first in first trained basis. With this method it was assumed that rapid completion of on line training was an indicator of motivation. Once completed the participants could book into a course at Liverpool Hospital and would attend that course seemingly much quicker than if they were to have waited for multiple participants from their site to complete the e-learning. With the new approach there has been better compliance with the credentialing requirements. The project is currently using this method to identify motivated individuals who have a higher likelihood of completing the course.

5. UTEC Team

Since the evolution of the Project there have been a high turnover of both the steering committee and the project team. A/Prof Richard Cracknell, Amanda Hawkins and Sarah Hoy have been present throughout the life of the project but there has been significant turnover of the other members and trainers.

There was an eight month gap in 2011/12 before new specialist trainers were employed to replace some departing members for the UTEC project. During this eight months, there was limited support available for the project officer for the purposes of running courses or marking the scans that participants were submitting. It was not possible to run courses during this time due to inadequate faculty available.

Since June 2012 the UTEC Team has been fully functional. There has been a clear advantage of running the project through Liverpool Hospital in relation to support. Liverpool is established in point of care ultrasound and has many Emergency consultants trained in its use. They have given their support and time to assist as faculty on courses that have been held as well as giving expert advice to the project team when required. This has supported the project team and the participants during time of poor coverage of UTEC trainers.

6. Project Oversight

The MTEC (Ministerial Taskforce for Emergency Care) was a group of Emergency Clinicians that had been formed at the request of the Health Minister in 2007, replacing the pre-existing Emergency Care Taskforce. The UTEC project was created through the MTEC and commenced in the 09/10 financial year, reporting back to the MTEC. At the end of 2011, halfway through the UTEC project, the MTEC was dissolved. This created a sense of ambiguity in terms of the project oversight and its reporting lines. In the Proposals section at the end of the document we make recommendations regarding the future of the UTEC project and its reporting lines.

ANALYSIS

The program was under development until the second half of 2011. After that the entire course content, as well as remote credentialing support was available through the Gem platform and this is functioning well. The month of May saw 50 participants trained in practical courses held centrally at Liverpool Hospital. Overall there are 410 participants who have completed training and are currently on the credentialing program and a further 55 participants enrolled and completing the e learning or awaiting practical training. The feedback from participants is very positive in relation to the course and the support provided by the UTEC team. There is still a great deal of interest being generated with the advertising email that is sent out periodically. There have been at least 50 participants enrolled with each mail out.

The strength of this project is that it utilises the current Australasian College for Emergency Medicine (ACEM) guidelines on point of care ultrasound and credentialing.

UTEC is the only point of care ultrasound training course in Australia that provides both the ultrasound education and also a supported credentialing package accessible to all participants across the state remotely. Participants have access to training that is both remotely accessible and cost effective. The program has been offered at no cost to the participants, as opposed to private courses that are very expensive. As a cost comparison, to put the 465 participants through the Australian Institute of Ultrasound's basic Emergency Ultrasound course ($3350 per person) would have cost $1,557,750, without any ongoing support or credentialing.
The online education package is a valuable resource for NSW Health; having invested in its establishment we need to plan to ensure it continues to be of benefit to clinicians in NSW.

There are still many departments and participants that have not been trained and there is strong ongoing demand for this training. The role and benefit of bedside ultrasound continue to develop and the demand for training is expected to continue to expand from its current level.

There are several options available for the future of the UTEC project. Regardless of the option chosen the project needs to become more closely aligned with a governing body such as the ACI, HETI or CEC. The other essential components include a champion(s) to continue to drive and develop the process, subject experts to train and assess and administration such as from a project officer. Administration involves running the Gem platform, enrolling participants and allocating them to designated groups. Also the organizational requirements to set up practical courses and general communication with participants and departmental heads.

Without additional support the project will cease to function on 30th June 2013.

Options for the future of UTEC.

The options include:

Rollover

Consultation with SWSLHD to request existing unspent funds from 2012/13 (approx $220,000) be rolled over to continue the project intact for another nine months. This would allow time to develop plans and can be done in conjunction with any of the other options listed below.

Continuation

Seek funding from the Ministry of Health to continue the program in its current form and with current staffing. Projected costs are $285,000 annually. The process and benefits have been described. This option offers the smoothest transition and greatest benefits. This option provides for 20hrs/week of specialist training and credentialing and a full time project officer.

Modification

The project is continued substantially the same with modification of various elements. Options here include centralizing the project officer role back to the Ministry of Health or the Pillars (ACI or HETI). With the project established it is possible that the project officer position can be reduced to 0.5, either based at Liverpool or centralized. This could reduce costs by $45,000. Elements such as on-line credentialing can be decentralized and tendered out to appropriate suppliers.

Evolution

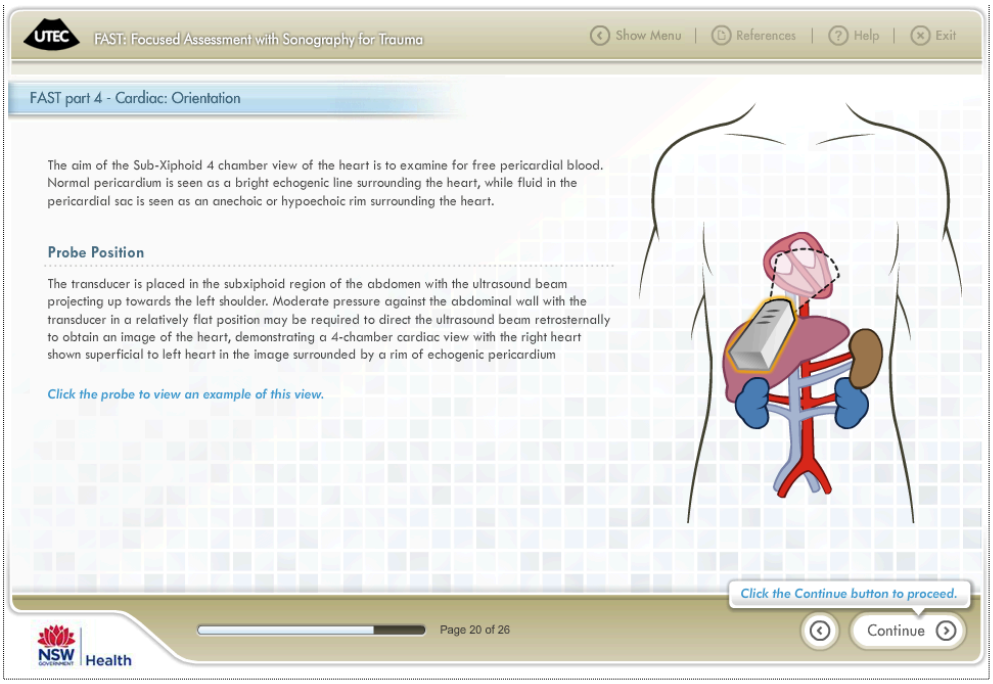
This option requires one of the support options above and the elearning continues as designed and the on-line credentialing is available to guide practice, however the summative step (currently the number of credentialed studies) is converted to an exit exam. This may result in a higher completion rate, as it becomes a single final step taken when the candidate feels ready.

Summary

The UTEC program has been developed and implemented over the past four years. It currently represents a valuable resource for Emergency Department Ultrasound training in NSW and a valuable investment by the Ministry of Health. It is in the best interest of timely Emergency Department clinical care for this to be made available into the future for Emergency Clinicians.

Attachments
UTEC Screenshots
UTEC Advertisement

GEM Platform Screenshots



Ultrasound Training
FOR EMERGENCY CLINICIANS

Health
South Western Sydney
Local Health District

Ultrasound Training
FOR EMERGENCY CLINICIANS

What is UTEC?

In 2009, the Ministerial Taskforce on Emergency Care in NSW identified training in point- of-care ultrasound for Emergency Doctors and Senior Emergency Nurses as a priority.

Funding has been provided by NSW Health to develop **UTEC** - a standardised emergency ultrasound training and credentialing program for NSW Emergency Department Clinicians.

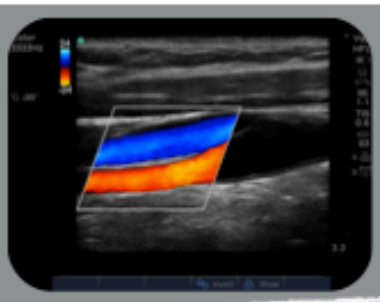
Training will be provided through a series of workshops supported by an on-line educational and credentialing tool to be rolled out over the next 4 years.

Measurable benefits of Point-of-Care Ultrasound

- FAST ultrasound show less time to operative intervention, shorter hospital lengths of stay, lower likelihood of requiring CT and fewer complication rates.
- AAA scans - the use of ultrasound has been associated with decreased time to diagnosis and improved outcome.
- Ultrasound guided vascular access has improved overall insertion success rate, reduction of haemothorax & pneumothorax and reduction in needle puncture time.

UTEC e-Learning

UTEC e-learning is hosted on NSW Health GEM website: -
https://gem.workstar.com.au



What UTEC will provide

- ✓ Didactic and Practical training in 4 modalities of point-of-care ultrasound
- ✓ On-line Credentialing process
- ✓ On Line learning
- ✓ Ongoing support

Primary Indications in UTEC:

- Focused Assessment Sonography in Trauma (FAST)
- Assessment of Ruptured AAA
- Identification of Pelvic Free Fluid
- Ultrasound-guided Vascular Access

For more information please contact UTEC Project Officer:
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NSW Health

REDESIGN