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Rural casting services: what educational resources do clinicians prefer?

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Clarification: Within this report the terms plastering and casting are used interchangeably and are intended to describe the provision of cast immobilisation, be that via a full cast, half cast or “backslab”, regardless of casting material used (plaster of Paris or other casting material).

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Abstract

Rural casting services: what educational resources do clinicians prefer?

This research explored the preferences of medical and health professionals working in rural health facilities in southern NSW with regard to the format of educational resources available to assist with plastering.

A cross sectional survey was conducted of all staff with a role in casting across all health facilities within Greater Southern Area Health Service (GSAHS) without a permanent orthopaedic onsite service. A total of 45/255 (18%) responses were obtained from a range of health professionals. Resource preference was scored on a five-point scale "extremely useful" to "not at all useful". Significance testing was completed using t-tests.

Respondents indicated a preference for a physical, paper-based instructional sheet in preference to a web-based how-to sheet (μ_d 0.82, $p= 0.00001$), competency checklist (μ_d 0.86, $p= 0.0002$), instructional book (μ_d 0.53, $p=0.005$) and web-based video (μ_d 0.59, $p= 0.01$). There was weak evidence of a preference for a physical how-to sheet over a DVD (μ_d 0.39, $p< 0.10$), although the DVD itself was significantly preferred to a web-based how-to sheet (μ_d 0.42, $p= 0.03$) or competency checklist (μ_d 0.47, $p= 0.04$). Little variation on preference could be attributed to profession, experience, training in casting or access to an orthopaedic surgeon, though preference for a physical how-to sheet was noted in respondents reporting higher levels of confidence (μ_d 0.71, $p= 0.02$).

Additional responses emphasised a preference for hands-on practice and convenience in resource selection. Electronic media were identified as being of limited applicability due to issues with information technology (IT) infrastructure and internet access.

This research showed a physical, paper-based instructional sheet as the preferred resource format. The responses also indicated a need for any transition to electronic learning to be matched by a commitment to improved IT access and for the educational preferences of rural practitioners to be considered in resource selection and development.

Keywords:

Plastering, educational tools, fracture management, rural health

Executive Summary

Background:

Musculoskeletal injuries requiring plastering are a common cause of presentation to hospitals and other health facilities across GSAHS. In a rural environment plastering may be performed by a range of health professionals. These health workers are often working with little support: in GSAHS alone there are 38 facilities that undertake casting, 35 of whom do not have a permanent onsite orthopaedic service. The large geographical area covered by GSAHS means expert guidance and face-to-face training are difficult to access and other forms of support such as educational resources are often more accessible to support a health worker with basic casting skills.

There are a variety of learning tools designed to assist health professionals with casting including books, instructional sheets, videos, competency checklists and websites. Very few of these tools have published information on their validity and to date no research has been published on which is preferred by health professionals working in a rural environment. This project explored the preferences for educational resources that assist with plastering among health professionals working in the rural areas covered by the GSAHS.

Aim:

The aim of this study was to investigate the preferences of rural health professionals for format of educational resource to support their practice in providing a casting service. Where possible this study looked to identify contributors to this preference in terms of professional grouping, levels of training or expertise, frequency of casting or overall confidence.

Study Design:

A cross-sectional study was conducted via a paper-based survey.

Sampling:

Recruitment for the study was conducted by saturation sampling, targeting all staff undertaking casting. All health facilities across GSAHS were deemed eligible for inclusion, with the exception of the hospitals at Albury, Bega and Wagga Wagga; facilities with a permanent orthopaedic onsite service.

A multi-pronged approach to recruitment was used as the provision of plasters may be undertaken by one or multiple individuals within the one facility, with significant variation across sites, usually based on historical roles or staff availability.

Response rate:

Of the available 255 surveys distributed, 45 surveys were returned giving an overall response rate of 18%.

Respondent profile:

The profile of respondents represented a range of professional backgrounds, including Allied Health Assistants (n= 3), Medical Practitioners (n= 16), Nurses (n= 12) and Physiotherapists (n= 14). Most respondents learned plastering on-the-job and had many years experience in casting. Access to an orthopaedic specialist was by phone, if at all, and rural clinicians reported feeling confident with casting despite providing plaster infrequently and with little support.

However, there were also rural clinicians who reported a lack of experience and confidence in casting. Nursing staff applying casts in a rural environment who report high levels of confidence were in the minority and some nurses reported anything beyond a backslab outside the scope of their practice. Nursing staff were not alone in lacking confidence, with a number of medical professionals and physiotherapists identifying lower levels of confidence. This lack of confidence is seen in, but not limited to, less experienced clinicians and requests for resources to help with education were noted in several professional groups.

Findings:

Resource preference was scored on a five-point scale "extremely useful" to "not at all useful". Respondents indicated a preference for a physical, paper-based instructional sheet in preference to a web-based how-to sheet (μ_d 0.82, $p= 0.00001$), competency checklist (μ_d 0.86, $p= 0.0002$), instructional book (μ_d 0.53, $p =0.005$) and web-based video (μ_d 0.59, $p= 0.01$). There was weak evidence of a preference for a physical how-to sheet over a DVD (μ_d 0.39, $p< 0.10$), although the DVD itself was preferred to a web-based how-to sheet (μ_d 0.42, $p= 0.03$) or competency checklist (μ_d 0.47, $p= 0.04$).

Little variation on preference could be attributed to profession, experience, training in casting or access to an orthopaedic surgeon. Respondents reporting higher levels of confidence in casting expressed a preference for a physical how-to sheet when compared with those less confident (μ_d 0.71, $p= 0.02$).

Additional responses emphasised a preference for hands-on practice and convenience in resource selection. Electronic formats were identified as being of limited applicability due to issues with IT infrastructure and internet access.

Conclusions and future directions:

This study has demonstrated a wide range of preferences for rural practitioners who undertake casting when it comes to the format of educational resources. Preference exists for a physical, pictorial instructional "how-to" sheet as the most useful format in a rural environment. Respondents highlighted the ease and convenience of this resource format. Electronic tools have a lower reported applicability due to ongoing issues with IT access and resources and any moves to an electronic learning environment must be matched by an appropriate rise in IT commitment from rural health services. This commitment should not just embrace infrastructure but also ensure staff have the knowledge, skills and confidence to embrace and implement changes in technology.

Rural practitioners have expressed an interest in obtaining ongoing support for casting services. Hands-on experience is identified as an important factor in training. In the absence of hands-on training, there is a range of casting resources available to rural clinicians which is quite diverse. Given a scarcity of published data to support the use of existing resource formats, future research to either demonstrate the validity of existing learning tools or to develop resources for use in casting education should take into account the learning needs of rural practitioners. The expressed preference for ease of use may have implications for the design of learning resources across a range of physical skills beyond the field of fracture management and can guide the selection or construction of a range of resources for use specifically in a rural environment and targeted to the needs of rural clinicians.

Introduction

Musculoskeletal injuries requiring plastering are a common cause of presentation to hospitals and other health facilities. When this front-line health care is occurring in rural environments there are a range of health professionals who may participate in the application of a plaster including doctors, nurses, physiotherapists and other health workers. These health workers are often working with little support as in rural facilities access to specialist input from an orthopaedic surgeon is reduced. Specialist face-to-face workshops in casting techniques are rarely available in this environment. In situations where expert guidance and face-to-face training is difficult to access other forms of support such as educational resources are often more accessible to health workers with basic casting skills.

There are a variety of learning tools designed to assist health professionals with plaster casting. These include books, instructional sheets, videos, competency checklists and websites. Very few of these tools have published information on their validity and to date no research has been published on which are preferred by health professionals working in a rural environment. This research explored the preferences for educational resources that assist with plastering among rural medical and health professionals working in the rural areas covered by the GSAHS.

Literature review

The provision of plaster casts is a staple function of health care and has been used for centuries for the management of fractures^{1,2}. While traditionally seen as the domain of medical professionals, casting is actually undertaken by a range of health professionals including doctors, nurses, physiotherapists, allied health assistants and plaster technicians³.

There is a significant variability in the levels of training, experience and skill of health professionals providing casts and in the training received in casting. A pilot study by Flanagan (2002) examined the training of casting technicians in a large hospital in the United Kingdom². This study reported that while the “application of plaster casts is an integral part of orthopaedic and trauma practice... there has been no requirement for medical staff to have casting training”². The same author pointed out that there is no longer a requirement for nurses to demonstrate competency in casting². This study examined the impact on casting practice of ensuring casting technicians were trained to certificate level and while many benefits to the facility and individuals concerned were reported there was little data provided to reinforce these claims.

Prior (2001) in a discussion paper also highlighted the inconsistencies in level of training in plastering and recommends a national standard for casting training throughout the United Kingdom³. The paper conveyed strongly the author’s expert opinion with reference to the legislative and policy framework present in that country. The training of medical professionals in casting has been identified as an area where levels of training is inconsistent and in some cases declining⁴. In a comprehensive survey of recent medical graduates in Victoria there were several areas of medical training in procedural skills where the respondents perceived their own proficiency as “inadequate”, with plastering an area of major concern⁵. This high quality study identified plastering as one of the areas where the author raised “the question of adequacy of training”⁵.

In facilities with an onsite orthopaedic service there has historically been a high degree of casting skill. Staff working in contact with orthopaedic specialists have access to expertise and may have access increased levels of on-the-job training or access to specialist resources. Additionally, the frequency of casting and the increase in practical skill that accompanies practice is consistent with most procedural skills where there is a direct correlation between frequency of task performance and perceived competence⁵.

Given similar rates of fracture in rural environments as in urban areas, many facilities in a rural environment are required to provide plaster casts or backslabs yet do not have an onsite orthopaedic service⁶. In these facilities access to appropriate educational resources may be the most readily available support for health professionals providing plaster casts. Allan and Schaefer (2005) examined the learning needs of rural general practitioners (GPs) and identified that “adequate education would support and equip GPs who choose to work in a sometimes difficult and isolated environment”⁷. The authors identified fracture management as a key learning area for rural GPs, in distinct contrast to urban doctors who have ready access to orthopaedic specialists, reflecting the “greater number of rural GPs providing procedural services”⁷. This paper also identified the difficulties in accessing and attending education sessions.

Given the difficulties in accessing education sessions, it is possible that education to “support and equip” rural practitioners in the field of casting may be accessed in forms other than face-to-face teaching. Emerging technologies, such as internet-based training, are becoming increasingly available. Sinkov, et al., (2004) surveyed orthopaedic resident doctors and specialists on their use of internet-based learning tools including web-based videos, online textbooks and tutorials⁸. While this research highlighted patterns of use, there was no critique of the tools and web-sites mentioned in the article⁸. The use of “paper-based resources” was highlighted as an ongoing feature of education for experienced medical practitioners⁸.

Prior and Miles (1999), in a published tutorial on casting encouraged staff not to ignore “reading and the use of audio-visual aides” but did not provide further detail on the aides in question⁹. Other authors have published instructional sheets demonstrating casting techniques¹⁰⁻¹⁷. There is a lack of published data to provide evidence of efficacy of these methods within the field of casting education.

The use of instructional videos for training of physical procedures has been demonstrated in several studies. Xiao, et al., (2007) demonstrated a significant improvement in central venous catheter insertion using web-based training via online videos when compared to paper-based training¹⁸. This high quality randomised controlled study was matched by another randomised controlled trial of similar quality by Jowett, et al., (2007) which demonstrated a significant improvement in the ability of surgical residents in surgical knot tying after computer-based video training¹⁹. This study “support(s) the use of... internet-based digital media to the financial and staffing-related problems associated with teaching surgical technical skills...”¹⁹. A non-randomised prospective study demonstrated web-based video training as an effective tool for skill development for both novice and specialist learners in endoscopy interpretation²⁰. Traditional videos have been used as a learning tool to enhance diagnostic skills in acute areas such as stroke diagnosis and compliance with protocols in a hospital environment^{21,22}. Again, little evidence can be found to support the use of either traditional or web-based videos in the field of casting or fracture management.

In an examination of the process of learning procedural skills Bullock, et al., (1999) implemented the use of a competency checklist for three medical procedures including forearm cast application²³. The study demonstrated that a competency checklist could reliably be used to gauge task performance, and while the study did not evaluate the effectiveness of the competency checklist as a learning tool per se, it did demonstrate some validity in its use in casting. Competency checklists have been used within other health fields, including the development of leadership skills in nursing and education of resident doctors^{24,25}.

Within the published literature there are a number of tools available to support the provision of casting, including textbooks, videos (both online and traditional), instructional sheets (both web or paper-based) and competency checklists. However, there is a lack of consensus or recommendation toward a particular educational tool as none of these tools has been assessed for efficacy. Similarly, the preferences and needs of rural practitioners undertaking casting have not been investigated.

Aims of the research and the research question

The aim of this study was to investigate the preferences of rural health professionals in terms of format of educational resource to support their practice in providing a casting service. Where possible this study looked to identify contributors to this preference in terms of professional grouping, levels of training or expertise, frequency of casting or overall confidence.

This study sought to answer the following research question:

“What format of educational resource is preferred by clinicians to support a casting service in rural health facilities in southern NSW with no onsite orthopaedic service?”

The null hypothesis was that there was no distinct preference for format of educational resource among rural clinicians who undertake casting.

Method

Ethics approval:

Ethics approval for this research was received from The Human Research Ethics Committee of GSAHS on 1/4/09 (project reference HREC/09/GSAHS/16).

Study Design:

A cross-sectional study was conducted via a paper-based survey.

Sampling:

Recruitment for the study was conducted by saturation sampling, with all staff with a role in casting across all eligible facilities invited to participate. This method was used to minimise the risk of survey, sampling and non-coverage errors²⁶.

All health facilities across GSAHS were deemed eligible for inclusion, with the exception of the three facilities with a permanent orthopaedic onsite service, namely hospitals at Albury, Bega and Wagga Wagga.

The number of potential participants at a particular health facility was identified by the chief researcher via phone contact to the facility reception, Nurse Unit Manager of the Emergency Department, facility manager and / or physiotherapy department. A multi-pronged approach was used as the provision of plasters may be undertaken by one or multiple individuals within the one facility, with significant variation from facility to facility, usually based on historical roles or staff availability. Once a key contact was established at a particular facility it was possible to determine how many staff undertake plastering in their department, ward or facility. The use of key contact people at facilities was designed to minimise the risk of non-contact bias²⁶.

Identification and recruitment of medical staff followed similar lines, with some variation to account for the role of doctors as private visiting contractors who work outside a departmental structure. A promotional note to raise awareness of the project was forwarded to the three General Practice Networks covering GSAHS (Murrumbidgee, Southern, Riverina) for inclusion in their regional newsletter or for distribution to local General Practitioners (GPs). Staff and managers of each health facility's emergency department were asked to identify if doctors provided plasters within their emergency department and if so, how many.

An appropriate number of letters containing information about the study were sent to key contacts at each facility for distribution to the staff they had identified. Additional promotion of the project occurred through the GSAHS newsletter network.

Participants:

Participants in the study were staff and visiting medical officers who provide fracture management within a range of environments (small hospitals, community health centres) across GSAHS. Participants included Emergency Department nurses, physiotherapists, medical practitioners and allied health assistants.

Participants indicated consent for their responses to be used in the research study by completing and submitting a questionnaire.

Exclusions:

Potential participants who work at a facility with permanent onsite orthopaedic specialists were excluded due to the likelihood of ready access to expert advice and a subsequent decreased reliance on other forms of educational support. Additionally, plastering is reported as a skill where perceived competence increases with

frequency of practice and experience ⁵. In GSAHS facilities with permanent onsite orthopaedic services act as referral hubs for surrounding areas. These sites manage a large number and wide variety of plastering situations, with a corresponding increased casting load among clinicians working in those facilities and by extension, improved levels of confidence and perceived competence. This expertise tends to decrease reliance on other forms of educational resource. The input of clinicians working in these facilities is unlikely to be representative of rural clinicians working in a more isolated environment who are more likely to rely on educational tools.

Survey design and piloting:

A paper-based survey was deemed the most appropriate way of reaching such a widespread and diverse workforce ²⁶. As with any paper-based survey, the response rate is a potential source of bias. Busy clinicians may see little value in completing the questionnaire, thus leading to a selective response ²⁷. To minimise the risk of this, the survey was kept short minimising time burden ^{28, 29}.

The facilities which were deemed ineligible for inclusion in the study provided a ready-made, experienced population for piloting of the survey. Staff in these centres were approached with drafts of the survey and associated resources, along with a piloting checklist to stimulate feedback ³⁰. Feedback from this round of piloting, along with guidance from mentors developed the key structure of the questionnaire. The survey was critiqued by experienced researchers through IRCST in a workshop setting which led to further refinement of the final survey tool.

Data collection:

Participants were provided with a package containing:

- A participation information sheet
- A two-page questionnaire
- One-page examples of (or scenes from) the following educational resource types:
 - Paper how-to sheet ³¹
 - Web-based how-to sheet ³²
 - Instructional DVD ³³
 - Web-based instructional video ³⁴
 - Competency checklist ³⁵
 - Instructional book ³⁶
- Reply-paid addressed return envelope

Selection of examples of casting resources:

There is little research demonstrating the efficacy of educational resources to support plastering skills in the workplace. Bullock (1999) in an examination of learners verified that a competency checklist could be used to assess the application of a short-arm plaster cast ²³. A key finding of this work was to demonstrate comparability between expert and non-expert observers ²³. The implications of the study was that suitable cast application can be assessed even in the absence of an expert assessor, something critical in rural areas where experienced clinicians may be few and far between. As this type of learning resource has a level of demonstrated validity for upper limb casts, this style of cast was selected as the procedure to be depicted in all resources, thereby allowing useful comparison between resource types.

Many rural facilities in GSAHS do not have a substantial library or a large number of resources available. The decision to find representative educational resources

became in some respects a value judgement between an ideal depiction of the procedure in question and what was likely to be available in a rural environment. Examination of locally held resources provided an existing competency checklist and how-to sheet that have been used in several GSAHS facilities^{31, 35}. Discussions with local orthopaedic doctors revealed an orthopaedic text that was highly regarded, widely used and locally available³⁶. Web-based and electronic resources were broadly searched using a mainstream search engine (Google) to identify representative resources. Every attempt was made to recruit resources from reliable sources, within the bounds of the firewall system of GSAHS.

The decision to provide stills from dynamic media (web-based video and DVD) was designed to allow for a number of factors. Not all employees of GSAHS have access to the internet at work, thus limiting their ability to peruse web-based content. Similarly the cost of providing a copy of a DVD resource to all participants would have proved prohibitive. Instead, the use of stills or extracts was designed as a prompt to encourage participants to consider that particular resource type and its potential role within the workplace. In a similar vein the extracts from the textbook and instructional sheet did not contain a full depiction of the procedure, but enough to act as a prompt to stimulate consideration of the resource and its usefulness within the workplace. It is acknowledged that the inability to provide DVDs and access to internet sites does not allow a comprehensive examination of the selected resources. This is recognised as a limitation to the comparability of the resources.

Data items:

The following data items were collected in the survey:

- Professional background
- Original training in plastering / casting
- Years experience making plasters / casts
- Frequency of making a cast
- Confidence in making a cast
- Access to an orthopaedic specialist
- Perceived usefulness of presented educational resources
- Which of the above factors influence resource preference

Statistical analysis:

The small response rate limited the statistical power of association within smaller groups such as individual professions. Pooled responses were used to enhance power where possible. The data obtained in the survey responses was technically ordinal, so median and mode scores have been reported. However, skew testing showed an acceptably normal distribution (skewness scores ranging from -0.42 to 0.10, within two standard errors of skewness ± 0.74)³⁷. This normal distribution permits the data to be used as interval data and allows the use of mean scores and parametric methods for data analysis³⁸. Comparisons within groups used a two-tailed paired t-test for significance with an independent two-tailed t-test used for comparisons between groups or subgroups, with a significance level of 0.05 deemed statistically relevant. All statistical analysis was completed using Microsoft Excel.

Additional responses were coded and categorised into key themes. The process of thematic analysis was applied in a two stage process, firstly identifying responses about the individual resources and secondly general responses about the provision of rural casting services and the support for the same³⁹.

Results

Flow of participants through the study:

Potential participants: Across all eligible facilities in GSAHS, 257 were identified by key personnel as potential participants and were sent a letter informing them of the study.

Withdrawals: One staff member responded to the information letter expressing they had been included in the study when they had no role in plastering and requested to receive no further information. All of the 256 remaining potential participants were sent a survey pack. One medical practitioner returned the pack indicating an inability to participate.

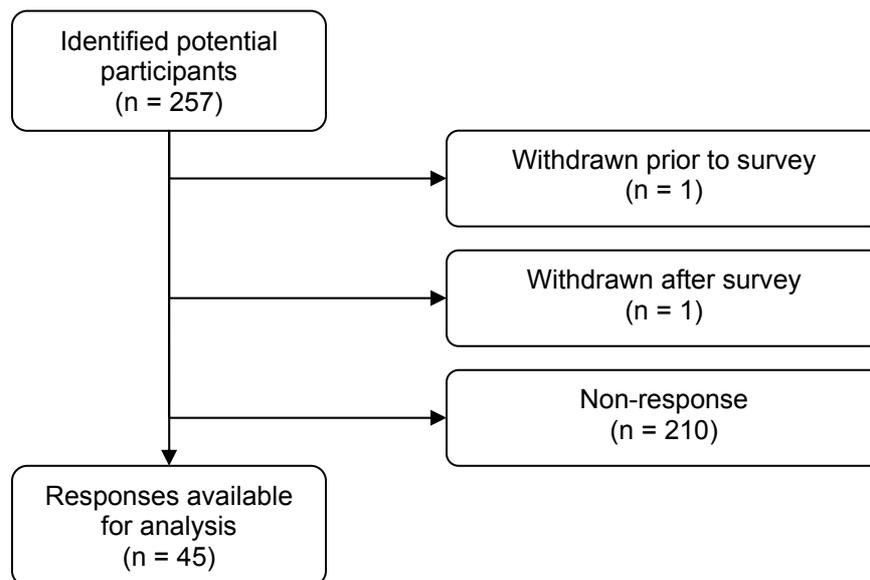


Chart 1: Participant flow through study

Response rate:

Of the available 255 surveys eligible, 45 surveys were returned giving an overall response rate of 18%.

Profile of respondents:

Profession: Responses were received from medical professionals (n= 16, response rate 10%), nursing (n= 12, response rate 16%) and physiotherapists / allied health assistants (n= 17, response rate 60%).

Initial training: The majority of respondents had their original training in casting through on-the-job training (n= 24) or through their initial training (n= 18). One respondent indicated both through initial training and on-the-job; given the question specifically indicates where the original training was received, this response was included in the initial training group. Only two respondents initially trained in casting through doing casting workshops, while one respondent indicated they had received training by other means (military training).

Experience: Most of the people who responded were experienced in casting, with 64% of respondents reporting more than 10 years experience (n= 29). Two

respondents reported 6-10 years of experience, eight respondents between three and five years and the remainder (n= 6) had less than two years casting experience.

Frequency of plastering: The frequency of casting varied widely, with some performing plastering daily (n= 2) or several times per week (n= 7). A number reported weekly casting (n= 12). The majority, however, reported infrequent casting with more than half respondents reporting casting monthly (n= 16) or less frequently than monthly (n= 8).

Confidence with plastering: The majority of respondents rated their confidence with casting positively, with 16 rating themselves as confident and 13 very confident. There is a substantial number who rated themselves as “In between” (n= 11), while those lacking confidence (n= 4) or not at all confident (n= 1) were in the minority.

Access to orthopaedic specialist: Access to an orthopaedic surgeon for rural clinicians remained primarily by phone, with 23 respondents indicating their ability to access specialist advice by this means. A further 15 respondents had access to a visiting orthopaedic specialist, while six reported no access to orthopaedic expertise. One respondent selected “Other” means of access, but provided no further detail. No respondents indicated access to orthopaedic specialists via telehealth (n= 0).

Examination of trends within respondent profile

Examination of professions within this response indicated that medical practitioners, physiotherapists and allied health assistants showed that the majority of respondents reported feeling confident or very confident with their casting skills. Within nursing respondents the response was less positive with less than half (42%) of nursing respondents reported feeling confident or very confident. Respondents who first learned casting through their initial training and on-the-job reported higher levels of confidence with plastering. Those who learned casting through workshops did not report high levels of casting confidence. A reported link between both frequency and experience in casting with perceived confidence did not translate to a high correlation coefficient (0.66 for experience and 0.34 for frequency of casting when matched to confidence levels) in this study⁵.

Combined analysis of resource preference:

Forty-two respondents provided scores on perceived usefulness of all resources on a scale ranging from 0 (Not at all useful) to 4 (Extremely useful). Two respondents rated some but not all resources and one respondent provided no numerical ratings. The frequency of responses for all groups for all resource formats is tabled below.

Perceived rating score	Web-based how-to sheet	Physical how-to sheet	DVD	Video (web-based)	Competency checklist	Instructional book
0	2 (5%)	0 (0%)	1 (2%)	0 (0%)	2 (5%)	2 (5%)
1	6 (14%)	1 (2%)	5 (12%)	7 (17%)	13 (30%)	4 (9%)
2	21 (48%)	13 (30%)	12 (28%)	14 (33%)	11 (25%)	16 (37%)
3	9 (20%)	12 (27%)	14 (33%)	15 (36%)	10 (23%)	11 (26%)
4	6 (14%)	18 (41%)	11 (26%)	6 (14%)	8 (18%)	10 (23%)

Table 1: Frequency of preference scores (percentage of total responses), all resources

Most resources are perceived as having a high level of usefulness (scores 3 or 4) than low level of usefulness (scores 0 to 1). Physical how-to sheets and DVDs both

scored positively with the majority of respondents rating these resources towards higher usefulness. Web-based videos and instructional books also rated positively with near to 50% positive. The web-based how-to sheet rated lowest in terms of positive responses, while the competency checklist garnered the highest number of negative response, with over one-third of respondents rating the resource either a 1 or 0 (Not at all useful).

Whilst median and mean scores indicated a fairly consistent response, the spread of mode scores demonstrates a wide range of preferences. Given the diverse personal nature of the learning style of individuals, some personal preference is to be expected within the response range. Summary statistics of median, mode and mean scores are presented in Table 2.

Perceived rating score	Web-based how-to sheet	Physical how-to-sheet	DVD	Video (web-based)	Competency checklist	Instructional book
Median	2	3	3	2.5	2	2
Mode	2	4	3	3	1	2
Mean (95% confidence interval)	2.3 (±0.30)	3.1 (±0.26)	2.7 (±0.31)	2.5 (±0.28)	2.2 (±0.35)	2.5 (±0.32)

Table 2: Median, mode and mean preference scores, all resources

With a mode of four, the highest number of respondents indicated a preference for a physical how-to-sheet. The mean scores for all resources, when considered, also show a preference for the physical how-to sheet. This preference can be demonstrated when mean preference scores and the corresponding 95% confidence interval are charted.

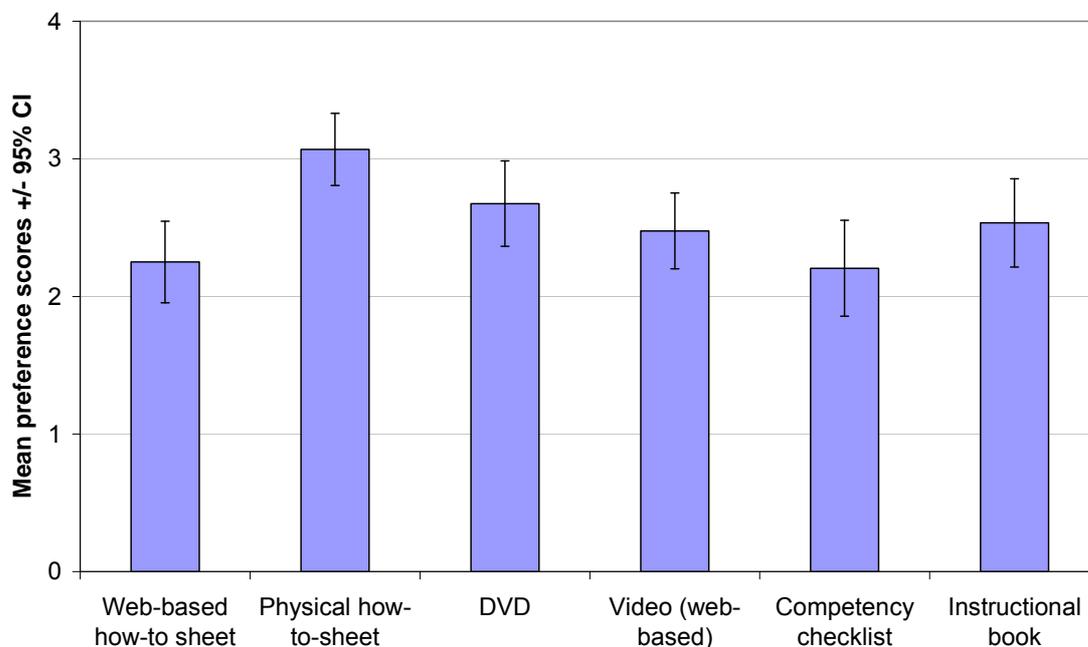


Chart 2: Mean preference scores and 95% confidence interval, all resources

Further analysis for association using multiple paired two-tailed t-tests indicated very strong evidence of a preference for the physical how-to sheet when compared with web-based how-to sheet with difference between means (μ_d) of 0.82 on the five-point

scale, (95% CI 0.59-1.05, $p= 0.00001$). The physical how-to sheet was similarly preferred over the other resource formats, with very strong evidence of a preference over the competency checklist (μ_d 0.86, 95% CI 0.62-1.11, $p= 0.0002$), strong evidence over the instructional book (μ_d 0.53, 95% CI 0.30-0.77, $p=0.005$) and evidence of a preference over the web-based video (μ_d 0.59, 95 % CI 0.36-0.82, $p= 0.01$). The level of evidence of a preference for the physical how-to sheet over the DVD was weak (μ_d 0.39, 95 % CI 0.16-0.63, $p< 0.10$).

Significance testing also demonstrated a preference for the DVD format over the web-based how-to sheet (μ_d 0.42, 95% CI 0.18-0.67, $p= 0.03$) and the competency checklist (μ_d 0.47, 95% CI 0.21-0.73, $p= 0.04$).

These findings demonstrate significant preference exists for certain resource formats among rural clinicians. As a result, the null hypotheses can be rejected.

Comments about the individual resources:

The additional comments about the physical how-to sheet emphasised its convenience.

Easy to access in plaster room there and then.

I like the physical "how-to" sheet. Very clear, can put it in plastic with the plaster trolley.

On the other end of the spectrum, the competency checklist was less likely to garner a positive response as a stand-alone resource.

Not helping HOW to apply.

A good reminder list. If recognised as training and competency tool to up skill hospital staff would be excellent.

May be useful in conjunction with practice opportunity.

Both the DVD and web-based video were positively received, although the associated comments presented a mixed picture, with issues of access remaining a key feature of the responses.

Limited use due to availability to access equipment

We share a computer, so web-based sheets and videos not always practical

Could quickly look up different types of cast

Several respondents identified the usefulness of dynamic media as an educational tool to be used outside of the work environment:

DVD and web-based video good for after-hours learning.

DVD also very good for home instruction

Similarly respondents viewed the DVD as an adjunct to learning rather than a stand-alone tool.

DVD together with practical course would be best

DVD a part of a learning experience to augment physical how-to sheet

Both the median and mode scores for the web-base how-to sheet and instructional book indicated a mixed response from rural practitioners. The web-based how-to sheet again raised issues of access to IT infrastructure:

Computer access not always available

If ready access to web (not presently allowed in our hospital)

The instructional book while receiving mixed ratings was identified as a convenient resource.

Easy access.

Good option of 1 stop shop for all information.

Differences across professions:

No significant difference was detected when comparing preferences between professions with the exception of the physical how-to sheet, where physiotherapists demonstrated a stronger preference when compared with nurses ($p < 0.05$). A summary of median and mode scores by profession is found in Table 3.

Profession	Web-based how-to sheet	Physical how-to-sheet	DVD	Web-based video	Competency checklist	Instructional book
Doctor	2 (2)	3 (3)	4 (3)	1 (2)	2 (2)	2 (3)
Allied Health Assistants	2 (2)	4 (4)	3 (3)	2 (2)	1 (1)	4 (4)
Nursing	2 (2)	2 (2)	2 (2)	2 (2)	4 (2.5)	2 (2)
Physiotherapists	2 (2)	4 (4)	3 (3)	3 (3)	1 (2.5)	2 (2)

Table 3: Mode (and median) preference scores by professions

Trends within professions:

Small numbers of responses within professional groups decreases the likelihood of detecting a significant preference.

Mode and median scores for medical professionals indicated a higher level of perceived usefulness for the DVD and physical how-to sheet in their work, while the web-based video received the least indication of preference. However, t-tests indicate a preference for the instructional book ($p = 0.02$) and physical how-to sheet ($p = 0.007$) over the competency checklist. No significant difference was found when comparing other resource formats.

Allied Health assistants tend to prefer physical media (books and physical how-to-sheets) in preference to electronic media generally, although the web-based video received a positive response. The competency checklist was not highly rated. Low response numbers prohibit testing for association.

Nursing professionals gave an extremely varied response. While the competency checklist achieved a mode of 4 no significant difference was found between resource preferences.

Physiotherapists' mode and median scores favoured a physical how-to sheet, and also saw value in the two examples of dynamic media. This preference for the physical how-to sheet was significant when compared to the web-based sheet ($p=0.0002$), competency checklist ($p=0.01$) and instructional book ($p=0.005$). The preference for the web-based video over web-based how to sheet ($p=0.01$) was also significant.

Influence of past and current experience:

Respondents were asked to identify what influenced their choice of resource. The highest ranked responses were confidence ($n=22$), experience ($n=19$) and frequency of casting ($n=18$). Only eight respondents indicated their choice of resource was influenced by their ability to access an orthopaedic specialist, while the same number selected "other" reason for their preference, the bulk of which indicated issues around information technology (IT).

Confidence: Respondents who classed themselves as Very Confident or Confident ($n=29$) indicated a higher preference for the physical how-to sheet, significantly more so than those with lesser confidence ($p=0.02$).

When examining the preferences of those who rate themselves more confident, the preference was significant for physical how-to sheet compared with all other media ($p<0.02$).

Those with lesser confidence ($n=16$) showed a greater inclination for dynamic media; however this preference was not statistically significant.

Experience: There appears little difference in resource preference according to years of experience, with median and mode scores almost identical for clinicians with more than five years experience, three to five years and those with two years or less. No significant difference was established on statistical testing.

Frequency of casting: There was no significant difference in preference when comparing frequency of casting; those who cast frequently (weekly or more frequently than weekly) reported a similar preference range to those who cast infrequently (monthly or less frequently than monthly).

Less frequent casters indicated a preference for the physical how-to sheet over both the competency checklist ($p=0.03$) and web-based how-to sheet ($p=0.04$).

More frequent plasterers prefer the physical how-to sheet to the web-based how-to sheet ($p=0.00001$), web-based video ($p=0.04$), competency checklist ($p=0.001$) and instructional book ($p=0.02$). Frequent plasterers also preferred the DVD format when compared to the web-based how-to sheet ($p=0.009$) and web-based video ($p=0.005$).

Access to orthopaedic specialty: Access to orthopaedic surgeon was not a significant factor in preferences.

Initial Training: Those who trained in casting while on-the-job were more likely to prefer the web-based video compared with those who learned casting as part of their initial qualification ($p=0.01$).

Additional responses- key themes:

Additional responses were included by many respondents. The key themes from these responses and selected quotes are below:

IT issues / facilities (n=9): One of the primary issues for respondents was the issue of IT, incorporating issues around infrastructure, access and ease of use.

Choices influenced by work environment and facilities available in rural site

The poor IT quality in GSAHS. Try getting internet in [this] Hospital!

We share a computer, so web-based sheets and videos not always practical

Opportunities for hands-on learning (n=9): Another theme to come through strongly was the preferred learning style of the respondents, with nine respondents expressing a preference for hands-on practice, either on-the-job or in a workshop situation.

Nothing as effective as "hands-on" if not in the workplace but as participation in workshops.

There is nothing like hands-on practice but these educational tools are excellent for those who don't know what a good cast is.

Resource design and contents (n= 5): While many provided comments on specific resources, some responses spoke more generally about the content of learning resources.

The learning resources would need to be kept up-to-date with the changes in materials that are available.

Immobilising the correct joints is critical and should be clear on any learning resource.

Perhaps it would be good to have a "list of common blunders"?

Need and desire for further training (n= 5): Several respondents identified a desire for ongoing or further training, either for themselves or for other staff in their facility.

As a GP/VMO I could do with more training for sure.

Would love more education about application of backslabs and casts.

Preference influenced by the needs of our hospital to have more people to make casts after hours.

It would be great to have access to good resources to help with training of new staff.

Limitations to practice / role delineation (n= 3): Several staff pointed out a clear role delineation within their health facility.

In general medical officers perform casting, nursing staff would reinforce plasters or do backslabs.

[!] only do backslabs, not full plasters.

Clinical priorities (n= 2): A couple of responses discussed clinical priorities within rural hospitals as a factor in viewpoints on casting resources.

Thankyou for looking at this important issue in rural remote areas.

While having a casting service is nice for our small hospital I can't see it happening (finance) + we would have a lot of other more urgent priorities.

Discussion

The profile of respondents within the survey population indicates a range of health professionals undertaking casting. A typical profile of these clinicians shows a professional who may come from a range of professional backgrounds, learned plastering on-the job and has many years experience in casting. Access to an orthopaedic specialist is by phone, if at all, and rural clinicians are confident with casting despite providing plaster infrequently and with little support.

While this “typical” profile, based on median responses from the survey, paints the picture of a skilled, resilient rural workforce, there are also rural clinicians who lack experience and confidence in casting. Nursing staff applying casts in a rural environment who report high levels of confidence are in the minority and some nurses see a distinct boundary to the limits of their role in plastering, viewing anything beyond a backslab outside the scope of their practice. Nursing staff are not alone in lacking confidence, with a number of medical professionals and physiotherapists identifying lower levels of confidence. This lack of confidence is seen in, but not limited to, less experienced clinicians and requests for resources to help with education were noted in several professional groups. This lack of confidence in casting and issues of role delineation may contribute to the situation, as reported by a key contact at a small rural facility, where no casting was undertaken locally and all fractures were managed by transferring to another hospital, at significant levels of distress to patients and a significant cost to the health service.

When considering the resource formats available for casting education, preference for an easy-to-use, practical, convenient resource led to the physical how-to sheet receiving the greatest degree of support. The preference for this format remained consistent across professions, despite differences in frequency of casting and confidence.

Preference for electronic media, either in DVD or web-based formats, appeared to be tempered by limitations to accessibility, with IT resources, internet access and time identified as influencing factors. These negative aspects were balanced by an appreciation of web-based learning being readily kept up-to-date with changes in casting materials and the reduction of clutter in the work environment. There appeared to be an acceptance of the potential for electronic resources, but also a recognised limitation within the current workplace settings. As an example, it appears that practitioners see a role for a DVD style resource but this resource format is seen to be as an adjunct to face-to-face learning or as an off-site learning tool rather than something that is useful in the hospital environment.

A point of interest lies in the use of telehealth for accessing orthopaedic opinions- none of the respondents used this form of technology for orthopaedic access. Respondents were not specifically asked about their level of competence or confidence accessing electronic resources as part of this survey, so it is impossible to gauge if this situation indicates a reluctance to engage in the use of technology by rural clinicians or more of the need for any technology to be convenient and accessible. As a greater degree of the daily business of health moves to electronic formats, with web-based x-rays and electronic medical records already in use within GSAHS, the issue of IT infrastructure remains an ongoing challenge for rural facilities. Similarly, the needs of staff to have the competence and confidence to engage and utilise this technology cannot be overlooked.

Competency-based training, while used in a variety of health settings and having been assessed in a casting context, did not appear to rate highly with rural clinicians as a stand-alone learning resource²³.

A number of respondents highlighted their preference for hands-on training, with several citing their preference for a workshop format. Interestingly, neither of the two respondents who first learned casting in a workshop setting reported feeling confident in casting, despite several years casting experience. Certainly the hands-on component of casting education is an issue and it is not claimed that a stand-alone educational resource can replace practical, hands-on training.

The influence of profession on casting resource preference did not appear to be strong, with little difference between professions. When examining trends within the professions, medical practitioners reported preference for physical resources, particularly in preference over a competency checklist. This trend was more evident with more experienced medical practitioners, three quarters of whom rated the competency checklist average or below. This may reflect changes in medical education, as using competency-based training in medical education has reached a greater level of focus in recent years²⁵. This preference for physical “in-hand” resources was matched by the preferences of both the physiotherapists and allied health assistants. Nursing staff reported a diverse range of preference.

While confidence with plastering was identified by respondents as a primary influence on resource preference, this was not matched by the survey findings. Again a physical how-to sheet appeared to be preferred with more experienced casting practitioners, otherwise differences between confident and less confident practitioners appeared minimal.

Frequency of casting has been identified as a direct influence on perceived competence⁵. This did not translate strongly to a change in preference between frequent and infrequent casters, although again frequent casters did express a preference for a physical how-to sheet. This desire for a quick, easy reference implies that these clinicians are looking for something to check against, rather than a tool to learn a new technique.

There appeared little evidence to support experience in casting, mode of initial training in casting or ability to access orthopaedic expertise as influences on the preference of rural clinicians.

Limitations to the study:

The response rate for the study was low, thereby limiting the statistical power of within and between group comparisons. While some authors claim there is “no ‘acceptable’ response rate”, a concern remains that those who do not respond may be significantly different from the population who do respond²⁷. Given the lack of previously published research in this field, there is little possibility of benchmarking to assess the degree of bias inherent in the study results²⁶.

Attempts to minimise some of the inherent bias in survey-based research were utilised, including strategies to reduce survey, non-contact, sampling and non-coverage bias²⁶. Barclay, et al., report that “non-responder GPs tend to be older, more experienced (and) single handed...”²⁷. Given that the average age of rural doctors is 55 years of age⁴⁰, it may be deduced that a high proportion of the medical practitioners that chose not to respond to the survey would fall into the category of more experienced medical practitioners. As discussed the survey findings tend to indicate a preference for physical, paper-based resources among experienced medical practitioners when compared to other learning tools such as a competency

checklist. While the small amount of data available does not allow for a definitive extrapolation to this extent, it is possible to speculate that the views of the non-responding GPs are not dissimilar to those research findings. Similar data on nursing, physiotherapy and allied health assistants response rate to surveys is not available.

Bias may have also arisen from the decision to providing stills from dynamic media thus limiting the comparability of the resources. To minimise this bias participants were encouraged to refer to the selected resources as prompts only and both the survey and participant information sheet emphasised this through use of the term “the format of educational resources” or referring to “resource formats”.

Conclusions and recommendations

The challenge to provide appropriate, up-to-date educational resources to assist rural practitioners in fracture management is ongoing and one that is changing with a growth in electronic learning. This study has demonstrated a wide range of preferences for rural practitioners who undertake casting when it comes to the format of educational resources. This variation in preference is to be expected given the personal nature of each individual’s learning style.

Analysis of the survey responses has shown that, while variation is present, evidence exists of a preference for a physical, pictorial instructional “how-to” sheet as the most useful format in a rural environment. Respondents highlighted the ease and convenience of this resource format, although this view was by no means universal. Electronic tools have a lower reported applicability due to ongoing issues with IT access and resources.

While health education parallels the general societal trend to an electronic environment, this must be matched by an appropriate rise in IT commitment from rural health services. This commitment should not just embrace infrastructure but also ensure staff not only have access to infrastructure but the knowledge, skills and confidence to embrace and implement changes in technology.

Rural practitioners have expressed an interest in obtaining ongoing support for casting services. Hands-on experience is identified as an important factor in training. In the absence of hands-on training, there is a range of casting resources available to rural clinicians which is quite diverse. Given a scarcity of published data to support the use of existing resource formats, future research to either demonstrate the validity of existing learning tools or to develop resources for use in casting education should take into account the learning needs of rural practitioners. The expressed preference for ease of use may have implications for the design of learning resources across a range of physical skills beyond the field of fracture management and can guide the selection or construction of a range of resources for use specifically in a rural environment and targeted to the needs of rural clinicians.

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Appendix A - Piloting Questions

Thank you for your assistance in piloting this questionnaire. Could you please provide feedback on this survey? Any feedback you can provide, via your responses to the questions below, would be appreciated and will be used to further refine the content, wording or structure of the survey. Any additional comments are very welcome.

How long did it take you to complete the questionnaire? _____

Were the instructions clear? _____

Were any questions unclear or ambiguous? _____

If so, which ones and why? _____

Did you object to answering any of the questions? _____

If so, which ones and why? _____

In your opinion has any major topic been omitted? _____

Was the layout of the questions clear? _____

Was the layout of the questions attractive? _____

Do you have any comments? _____

Checklist modified from: Bell, J (2005) Doing your research project: a guide for first-time researchers in education, health and social science 4th edition. Berkshire, McGraw-Hill Education pp 147-148.

Appendix B - Participant Letter of Invitation



**GREATER SOUTHERN
AREA HEALTH SERVICE
NSW HEALTH**

Incorporating

Health Services
Adelong
Albury
Ardlethan
Barellan
Barham
Barmedman
Batlow
Batemans Bay
Bega
Berrigan
Bombala
Boorowa
Braidwood
Coolamon
Ganmain
Coleambally
Cooma
Cootamundra
Corowa
Crookwell
Culcairn
Darlington Point
Delegate
Deniliquin
Eden
Finley
Goulburn
Griffith
Gundagai
Gunning
Hay
Henty
Hillston
Holbrook
Jerilderie
Jindabyne
Junee
Leeton
Lockhart
Mathoura
Moama
Moruya
Moulamein
Murrumburrah
Harden
Narooma
Narrandera
Pambula
Queanbeyan
Tarcutta
Temora
The Rock
Tocumwal
Tooleybuc
Tumbarumba
Tumut
Ungarie
Urana
Wagga Wagga
Weethalle
West Wyalong
Yass
Young

Rural casting services: what educational resources do clinicians prefer?

Dear Health Professionals

I am undertaking research into the educational preferences of medical and health professionals providing a casting service in rural areas of southern New South Wales. I am seeking to survey as many people as possible across Greater Southern Area Health Service (GSAHS) who make plasters or backslabs as part of their work role.

The purpose of this research is to collect information about the preferences of medical and health professionals when it comes to educational resources that assist with plastering.

This information is needed to assist rural practitioners in providing a casting service and may potentially be used to devise educational resources specific to rural needs.

This information has been sent to your department because you work in a public facility without a permanent onsite orthopaedic service and provide plasters as part of your role.

In the coming weeks your ward / department will receive packages that contain the survey and supporting information. When it arrives, please take the time to consider this survey and complete it if you wish to participate. I am very interested in your views and opinions, so please share them!

If you have any questions about the project or the questionnaire, please ring David Schmidt on (02) 6492 9129 or email David.Schmidt@gsahs.health.nsw.gov.au

Regards

David Schmidt
Chief Physiotherapist
Bega Valley Community Health
Ph 02 64929129
Fax 02 64923274

**Better Health for
Rural People**

Page 1 of 1

Version 1.2 03/03/2009

Greater Southern Area Health Service
ABN 17 196 442 397
GPO Box 1845 (34 Lowe Street) Queanbeyan NSW 2620
Tel (02) 6128 9777 Fax (02) 6299 6363
Email corporate@gsahs.health.nsw.gov.au
Website www.gsahs.nsw.gov.au

Appendix C - Participant Information Sheet



**GREATER SOUTHERN
AREA HEALTH SERVICE
NSW HEALTH**

Incorporating

Health Services
Adelong
Albury
Ardlethan
Barellan
Barham
Barmedman
Batlow
Batemans Bay
Bega
Berrigan
Bombala
Boorowa
Braidwood
Coolamon
Ganmain
Coleambally
Cooma
Cootamundra
Corowa
Crookwell
Culcairn
Darlington Point
Delegate
Deniliquin
Eden
Finley
Goulburn
Griffith
Gundagai
Gunning
Hay
Henty
Hillston
Holbrook
Jerilderie
Jindabyne
Junee
Leeton
Lockhart
Mathoura
Moama
Moruya
Moulamein
Murrumburrah
Harden
Narooma
Narrandera
Pambula
Queanbeyan
Tarcutta
Temora
The Rock
Tocumwal
Tooleybuc
Tumbarumba
Tumut
Ungarie
Urana
Wagga Wagga
Weethalle
West Wyalong
Yass
Young

PARTICIPANT INFORMATION SHEET

Rural casting services: what educational resources do clinicians prefer?

Dear Health Professional

You are invited to participate in a research study into the educational preferences of medical and health professionals providing a casting service in rural areas of southern New South Wales.

The study is being conducted by
David Schmidt, Chief Physiotherapist, Bega Valley Community Health, Ph: 64929129,
under the guidance of:
Elizabeth Huppatz, CNC Aged Care & Rehab - Best Practice, Batemans Bay Hospital, Ph: 6124 9828

The research has been made possible by a grant from the NSW Institute of Rural Clinical Services and Teaching (IRCST).

The purpose of this research is to collect information about the preferences of medical and health professionals when it comes to the format of educational resources that assist with plastering. This information is needed to assist rural practitioners in providing a casting service and may potentially be used to devise educational resources specific to rural needs. While there are unlikely to be any immediate benefits to you, this knowledge will have the potential to improve the levels of support for clinicians providing plasters in a rural environment.

You have been invited to participate because you work in a public facility within Greater Southern Area Health Service (GSAHS) without an onsite orthopaedic service and provide plasters or backslabs as part of your role. All staff who meet this criteria are invited to participate.

Participation in this study is voluntary. It is completely up to you whether or not you participate. If you decide **not** to participate, it will not affect your work or relationship with GSAHS now or in the future. There are no risks to you in participating or not participating.

This study is conducted by paper survey. Attached you will find a concise questionnaire, the aim of which is to collect information on your preferences around casting educational resources. The questionnaire takes about 15 minutes to complete.

By completing and submitting a questionnaire, you are indicating your consent for your responses to be used in the research study. If you choose not to participate in the study, either do not return your survey or leave your survey blank and return it.

It may not be possible to withdraw your data from the study results once submitted as these contain no identifying details: the researcher will be happy to discuss this further with you if you wish, before you complete or submit a copy of the survey.

**Better Health for
Rural People**

Page 1 of 2

Version 2.2 06/05/2009

Greater Southern Area Health Service
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GPO Box 1845 (34 Lowe Street) Queanbeyan NSW 2620
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Braidwood
Coolamon-
Ganmain
Coleambally
Cooma
Cootamundra
Corowa
Crockwell
Culcairn
Darlington Point
Delegate
Deniliquin
Eden
Finley
Goulburn
Griffith
Gundagai
Gunning
Hay
Henty
Hillston
Holbrook
Jerilderie
Jindabyne
Junee
Leeton
Lockhart
Mathoura
Moama
Moruya
Moulamein
Murrumburrah-
Harden
Narooma
Narrandera
Pambula
Queanbeyan
Tarcutta
Temora
The Rock
Tocumwal
Tooleybuc
Tumbarumba
Tumut
Ungarie
Urana
Wagga Wagga
Weethalle
West Wyalong
Yass
Young

If you choose to complete the questionnaire, please return in the enclosed reply-paid envelope to:

Plaster Survey- attn David Schmidt
Bega Valley Community Health
Reply Paid 173
Bega NSW 2550

Completed questionnaires will be stored in a lockable, secure place in the Bega Community Health building when not in use and will be accessible only to the primary researcher.

All those who receive the questionnaire will receive a reminder letter approximately three (3) weeks later. At that time if you have already completed and returned the questionnaire you may disregard the reminder. However, if you have not completed it, please do so and return it as soon as possible. No further reminder letters will be sent.

The study results will be submitted in a research report to the NSW Institute of Rural Clinical Research and Teaching, presented at a rural health conference and / or submitted for publication to a peer-reviewed journal. However, in any publication, information will be provided in such a way that you cannot be personally identified. A brief summary of results (e.g. one page) will be sent to all sites that have been invited to participate.

If you have any questions about the project or the questionnaire, please ring David Schmidt on (02) 6492 9129 or email David.Schmidt@gsahs.health.nsw.gov.au

This research project has been approved by Greater Southern Area Health Service Human Research Ethics Committee. If you have any complaints about the conduct of the project, please contact the committee through:

The Complaints Officer
GSAHS HREC
PO Box 395
Albury NSW 2640
Tel 02 60808900 Fax 02 60808999

Thank you for taking the time to consider this study.
If you wish to take part in this research, please complete and submit the attached questionnaire.
This information sheet is for you to keep.

David Schmidt
Chief Physiotherapist
Bega Valley Community Health
Ph 02 64929129
Fax 02 64923274

Elizabeth Huppatz
CNC Aged Care & Rehab - Best
Practice
Batemans Bay Hospital
Ph: 6124 9828

**Better Health for
Rural People**

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Version 2.2 06/05/2009

Greater Southern Area Health Service
ABN 17 196 442 397
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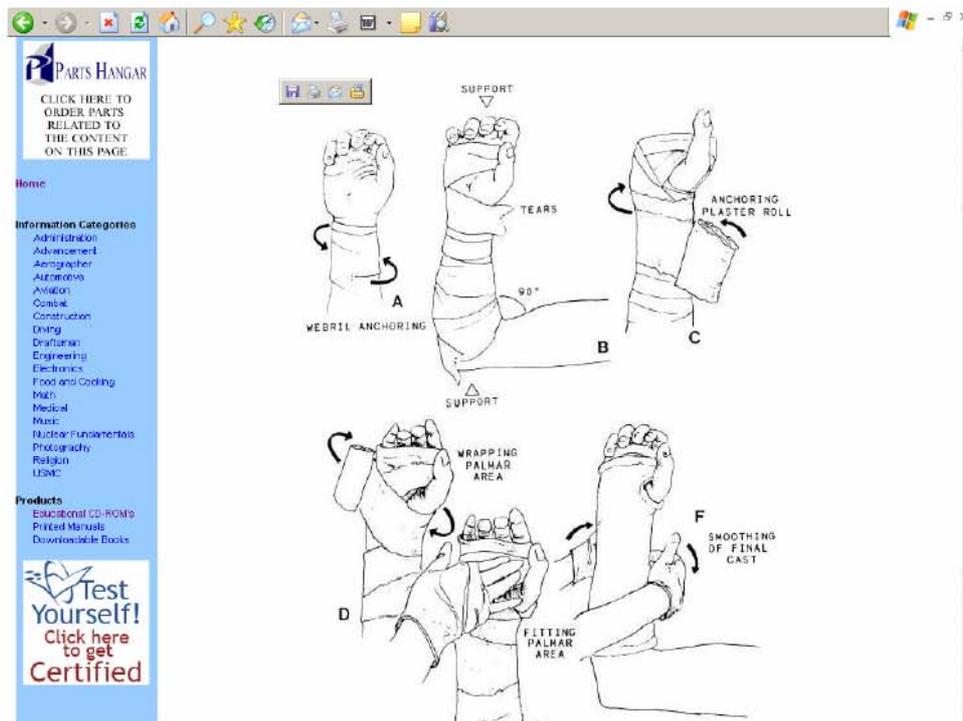
Appendix D - Examples of Casting Resources

Rural casting services:
what educational resources
do clinicians prefer?



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Example 1: Web-based how-to sheets



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Rural casting services:
what educational resources
do clinicians prefer?

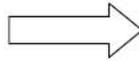


**GREATER SOUTHERN
AREA HEALTH SERVICE
NSW HEALTH**

Example 2: Physical how-to sheets

BELOW ELBOW BACK SLAB APPLICATION

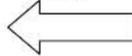
Step 1:



Position arm with elbow supported
and at 90°. Wrist in neutral.



Step 2:



Pad arm with layers of cast padding extending
over palm and down to elbow crease to allow
material for rolling back later on. Do not use
stockinette under padding.

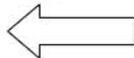
Step 3:



Premeasure slab. Use
12 layers of 10cm wide plaster
(wider plaster for bigger arms).
Slab extends from 3-4cm distal
to elbow crease to just proximal
of distal palmar crease.



Step 4:



Pre-cut angle for palmar crease and thumb cut-
out while slab is still dry.

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03/03/2009

Rural casting services:
what educational resources
do clinicians prefer?



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Example 3: Instructional DVD



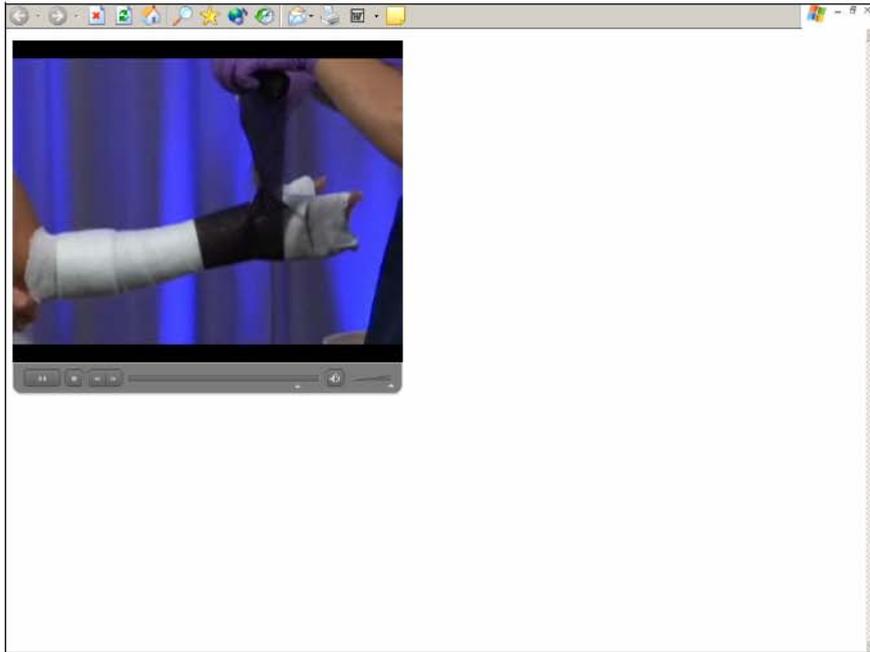
Reproduced with permission of publisher from "Medic, Corpsman, EMT Basic Training Videos #3 (DVD)" Brookside Press

Rural casting services:
what educational resources
do clinicians prefer?



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Example 4: Instructional video (Web-based)



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<http://www.naot.org/videos.html>

Rural casting services:
what educational resources
do clinicians prefer?



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Example 5: Competency checklist

Competency Checklist for Application of Basic Short-arm Backslab

Criteria	Achieved Y/N	Comments
Patient positioned in supported / comfortable position		
Procedure explained to patient		
Padding applied ensuring coverage / freedom where appropriate		
Slab length pre-measured from distal palmar crease to 3-4cm from elbow crease		
Backslab made of appropriate width / layers of POP		
Slab applied in appropriate position to immobilise #		
Bandaging supplies appropriate support		
Slab allows appropriate finger / elbow ROM		
Advice given re: care of plaster		
Patient comfort and safety ensured throughout		
Therapist safety ensured throughout		

Competent yes / no

If no: development strategies:

Assessor Name:
 Signed:
 Date:

Participant Name:
 Signed:
 Date:

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Rural casting services:
what educational resources
do clinicians prefer?



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Example 6: Instructional book

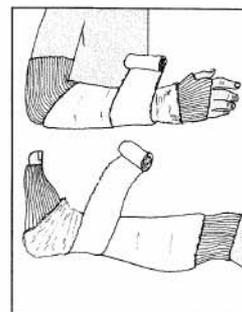
BASIC PLASTER TECHNIQUES – PLASTER BANDAGING 61



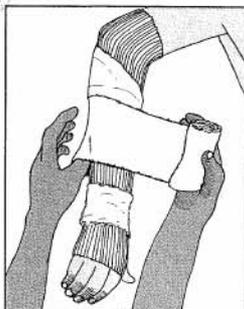
31. Plaster bandage wetting (a):
Plaster bandages should be dipped in tepid water. Secure the end of the bandage with one hand to prevent the end becoming lost in the mass of wet bandage. Hold the bandage lightly with the other without compression. Immerse at an angle of 45°, and keep under water until bubbles stop rising.



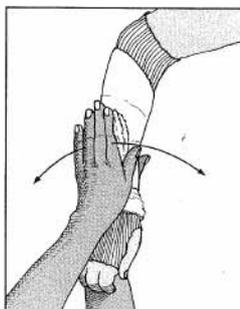
32. Plaster bandage wetting (b):
Remove excess water by gently compressing in an axial direction and twisting slightly. Alternatively, pull the bandage through the encircled thumb and index while lightly gripping the bandage.



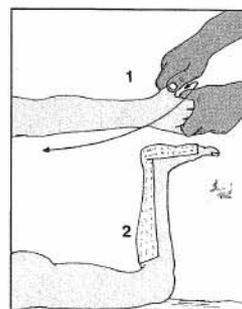
33. Plaster bandage application (a):
Most moulding of the plaster will be required at the wrist in upper limb plasters, and at the ankle in lower limb plasters. It is often useful to apply the more proximal parts first, so that moulding can be more profitably carried out against a set or nearly set cuff of plaster on the forearm or calf (i.e. start a forearm plaster at the elbow, and a below-knee plaster at the tibial tubercle).



34. Plaster bandage application (b):
Roll each bandage without stretching if there is no wool beneath; if there is a layer of wool, and no swelling is anticipated, a little even pressure may be applied to compress the wool to half thickness. Plain tucks may be used distally to ensure a smooth fit, but figure-of-eight or reverse turns should not be used if local constriction is to be avoided.



35. Plaster bandage application (c):
After the application of each bandage smooth the layers down to exclude any trapped air and consolidate the plaster. A second and, if necessary, third bandage may be applied to complete the proximal portion. Each bandage should extend 2-3 cm distal to the previous, and be well smoothed down. The distal part may then be completed, and the hand or foot portion moulded before setting is complete.



36. Plaster bandage application (d):
Where possible, the assistant should hold the limb in such a way that the surgeon has a clear run while applying the plaster (1). Where support must be given to a part included in the plaster, the flats of the hands should be used, and the hands eased proximally and distally to avoid local indentation. Where slabs are used, try to let gravity assist rather than hinder (2).

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Appendix E - Participant Survey



Rural casting services: what educational resources do clinicians prefer?

You are invited to participate in a research study into the educational preferences of medical and health professionals providing a casting service in rural areas of southern New South Wales.

The study is being conducted by David Schmidt, Chief Physiotherapist, Bega Valley Community Health, Ph: 64929129, under the guidance of: Elizabeth Huppertz, CNC Aged Care & Rehab - Best Practice, Batemans Bay Hospital, Ph: 6124 9828

The purpose of this research is to provide information about the preferences of medical and health professionals when it comes to the format of educational resources that assist with plastering. This information may potentially be used to devise educational resources specific to rural needs.

By completing and submitting a questionnaire, you are indicating your consent for your responses to be used in the research study.

About your background and casting experience:

What is your professional background?

Medicine	Nursing	Physiotherapy	Other: _____
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How did you originally learn about plastering / casting?

As part of initial training	On-the-job training	Workshops / short courses	Other: _____
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

In total, how long have you been making plasters / casts?

< 1 year	1- 2 years	3-5 years	6-10 years	> 10 years
<input type="checkbox"/>				

Over the past year, how often have you made a cast?

Daily	3-4 times a week	About once a week	About once a month	Less often than monthly
<input type="checkbox"/>				

In general, how confident are you at making a cast?

Very confident	Confident	In between	Lacking confidence	Not at all confident
<input type="checkbox"/>				

Do you have access to an orthopaedic specialist?

Visiting	Accessible by phone	Accessible by telehealth	No access	Other: _____
<input type="checkbox"/>				



Rural casting services: what educational resources do clinicians prefer?

Educational Resources

On the following pages you will find examples or extracts of the learning resources available to assist plastering and casting. Please rate how useful you perceive these resource formats to be in your workplace:

	Extremely useful			Not at all useful		Comment
	4	3	2	1	0	
Web-based "How-to" sheet	<input type="checkbox"/>					
Physical "how-to" sheet	<input type="checkbox"/>					
DVD	<input type="checkbox"/>					
Video (web-based)	<input type="checkbox"/>					
Competency checklist	<input type="checkbox"/>					
Instructional book	<input type="checkbox"/>					

In your opinion, is your preference, as indicated above, influenced by (tick as many as apply):

- How long you've been making casts?
- How often you make a cast?
- Your confidence with making casts?
- Your access to an orthopaedic specialist?
- Other: _____

Do you have any other comments? _____

If you choose to complete the questionnaire, please return in the enclosed reply-paid envelope to:

Plaster Survey- attn David Schmidt
Bega Valley Community Health
Reply Paid 173
Bega NSW 2550

If you have any questions about the project or the questionnaire, please ring David Schmidt on (02) 6492 9129 or email David.Schmidt@gsahs.health.nsw.gov.au