

# Older people experiencing care in Scotland on the move

Louise Kelly, Improvement Programme Manager: Care about Physical Activity (CAPA)  
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## Who we are and what we do

The Care Inspectorate is the scrutiny and improvement body for the social care sector in Scotland. Commissioned by the Scottish Government through the Active Scotland Division it leads the Care About Physical Activity (CAPA) Improvement Programme. CAPA focuses on building skills and confidence in social care professionals to promote movement with older people who experience social care in Scotland. It runs until October 2018.

## The CAPA programme:



### Methods

- Organisations completed a self assessment.
- Baseline measurements were set locally.
- Qualitative and quantitative data tracked over time.
- Small improvement teams collaborate at learning events.
- The CAPA resource pack generates change ideas.
- The improvement advisors support teams locally to improve.

## Background

Older people experiencing social care should meet activity guidelines (150 mins of moderate activity/week and strength/balance activities twice weekly) but often do not.



### CULTURE OF SEDENTARY BEHAVIOUR EXISTS

For example, care home residents can spend 80-90% of their time seated or lying down.



### INACTIVITY HAS A NEGATIVE IMPACT

on physical, social, emotional and mental health.



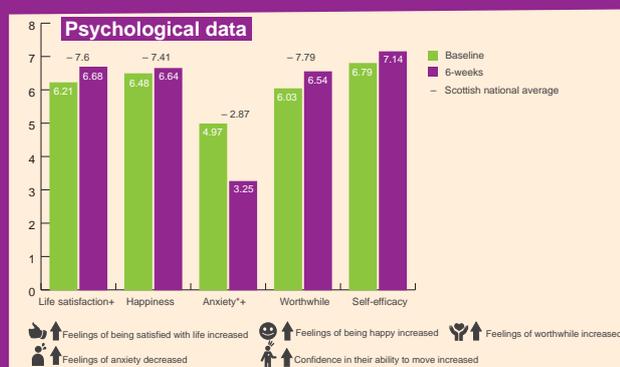
### THIS IS A COMPLEX PROBLEM

Causes include risk aversion; lack of staff knowledge; culture; activity being seen as someone else's problem.

## Results and outcomes

Data demonstrates that the improvement programme has positively influenced social care professionals' perceptions of physical activity in a care setting and increased self-efficacy to enable physical activity and movement for those experiencing care (n=293). Statistically significant improvements in physiological and psychological data are recorded below.

### Physiological data



## Story about Abe

In May 2017 Abe was falling 2-3 times per week requiring assistance to walk with a walking frame. As part of the CAPA programme he has been supported to take up his old hobby of gardening. By August, he was able to walk out to the greenhouse assisted, but without his frame, and was reported as being safe and stable when doing this. By October, Abe had experienced no falls for four months.

Staff and family have noticed a huge difference in his mobility, overall stability, and his mood (which has lifted). His Berg Balance scores have improved from 39 (medium fall risk) to 44 (low fall risk).



He now requires no assistance when walking.

## Messages for others

- Involve local experts, local community, family, friends and all staff.
- Start with conversations and what is important to the person.
- Have a range of change ideas.
- Develop clear expectations, prioritise improvement and use PDSAs to plan improvements.
- Keep tests of change small and manageable.
- Schedule 'study' time with improvement teams.
- Keep measures relevant and easy to administer.
- View each setback as a step to future understanding and real improvement which is sustainable.
- Involve all the relevant people in the tests of change.

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For more information visit: [www.capa.scot](http://www.capa.scot)

# An integrated approach to deliver an education programme aimed at improving the detection and alerting of the deteriorating patient in community

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## AIM

To improve the collaboration between primary and secondary care, specifically the detection and potential pre alerting of the deteriorating patient in the community.

Significant challenges exist in the rural settings of South Lanarkshire Health and Social Care Partnership (SLH&SP) specifically 'time to treatment'. SLH&SC partnership covers a vast geographical area (Figure 1), with numerous localities and varying team configurations.

Clydesdale locality is the largest in Lanarkshire, covering 512 square miles. Rural travel distances and times vary and can be up to 45 miles one way, taking in excess of one hour to travel. This influences staff decision making and reinforces the need for early detection and pre alerting to ensure timely, effective safe care (Carberry and Harden 2016; NICE 2016; RCP 2012; SIGN 139).



## METHODS

### Description of work:

Two structured educational programmes were delivered to multidisciplinary community teams, Clinical support worker Recognition Assessment Support and Help CRASH (Watson & Carberry 2014), CSW/AHPs (n = 46) and Acute Assessment Critically Unwell Treatment and Escalation AACUTE for RNs (n = 27).

Scenario based learning within both courses were tailored specifically to meet vastly different staff roles and experiences. Questionnaires were used to evaluate the programmes.



Clinical support worker  
Recognition Assessment Support & Help



Acute Assessment Critically Unwell  
Treatment and Escalation

### Results:

An extract of staff feedback is illustrated in Table 1.

Question	Yes % (n)	No % (n)	Same % (n)
Are you more familiar with NEWS?	100% (73)		
Are you more comfortable with ABC approach?	100% (73)		
Would you recommend the course to a colleague?	100% (73)		
Were the topics appropriate?	100% (73)		
Was course length appropriate?	94% (69)	6% (4)	

### Comments:

- If the course was longer - we would be able to undertake more scenarios.
- A lot of information and learning - a longer course might be better.
- All of the staff found the course helpful.

## KEY MESSAGES/OUTCOMES

Staff feel more confident and competence has improved

Staff can demonstrate use of Structured Assessment and clear decision making

Closer working relationships between community and hospital practitioners

Improved time to treatment is crucial in rural areas

Staff can demonstrate enhanced knowledge and skills in detecting deterioration



## CONCLUSIONS & WHAT'S NEXT?

- We can conclude that the education programmes have been effective in improving staff competence and confidence
- Further multidisciplinary training is underway
- Quality improvement studies are planned including sepsis pre alerting with GP colleagues and Community Link Practitioners.
- Research is being planned to evaluate the impact on practitioners skills
- Focus on impact on practice such as effect on patient outcome specifically analysis of pre alerting and patient stories

### REFERENCES

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- Watson D, Carberry M (2014) Training HCAs to recognise patient deterioration. Nursing Times; 110: online issue <https://www.nursingtimes.net/journals/2014/08/07/bz/n/130814-Training-HCAs-to-recognise-patient-deterioration.pdf>

# Supporting Integration through AHP Practice Placement Educator Training

Anne Wallace, Paul Moran, Jude Bisset, Heather Donald, Anna Lindahl, & Julie Rankin  
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## Background and Aim:

- Provision of clinical educator training for AHP educators is a requirement in placement agreements between HEIs and NHS.
- Changes in policy and consequently delivery of care require integrated practice.
- Preparing students for the integration agenda is key to contemporary AHP education.
- Educating Practice Educators in an integrated multidisciplinary environment aims to promote the integration agenda and provide opportunities for networking

## Methods:

Course format and delivery is designed to reflect the aims:

- A CPD and education opportunity for AHP Practitioners who supervise, assess and support students to achieve their learning objectives whilst on placement.

## PARTICIPANTS

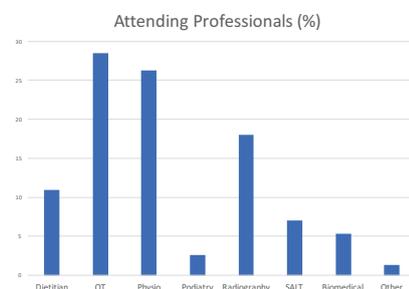
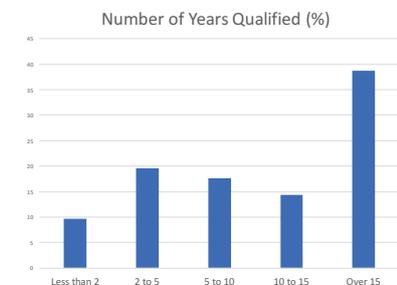
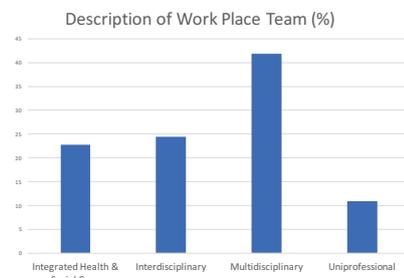
- Multi-professional – AHP and other professionals from Health, Social and Emergency Care backgrounds reflecting the integration model.
- Mixed experience –novice and experienced Clinical Educators

## DELIVERY

- Experienced multi-professional team of Educators.
- Small mixed groups, discussion and activities

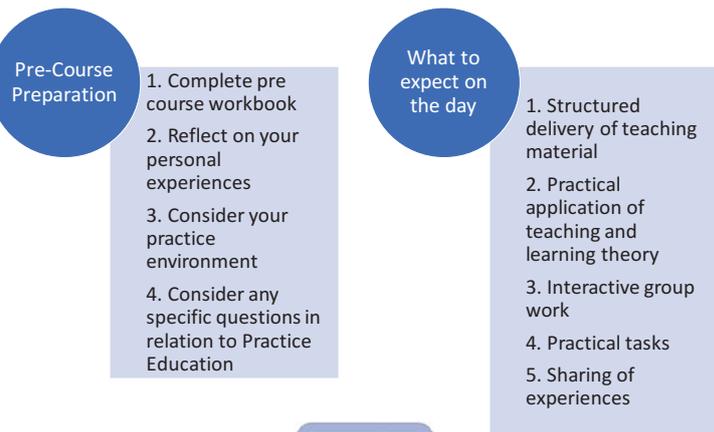
## Results:

**1. Participants** : A total of 502 participants undertook the course between Sept 2015 - March 2018. The distribution of professions, experience levels and work place teams are outlined in the graphs below.



## 2. Course Evaluation Quotes:

Confidence and awareness is increased in participants allowing opportunities for further integrated placements to develop.



## Conclusion:

- Course participants recognised the importance of integration and team working as part of the student experience.
- Mirroring multidisciplinary, integrated working, the course raises awareness of its importance in student practice education, producing a positive impact on placements, future workforce and service users.

## Future Work

Further development of courses to expand opportunities for creating awareness around integrated and contemporary placement agenda, leading to alternative models of placement delivery and expanding capacity.

# Doctorate of Physiotherapy (DPT): Creating a new Career Pathway

Donna Wynne, Anne Wallace, School of Health Sciences Robert Gordon University Aberdeen

## Introduction

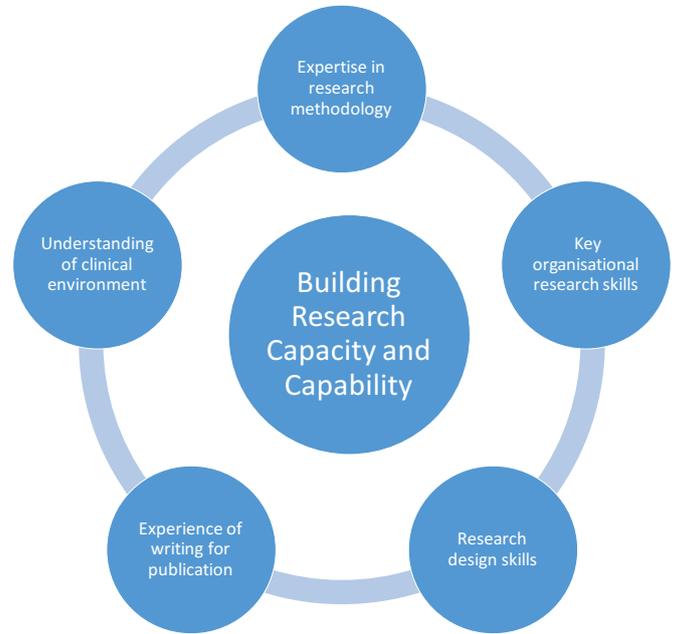
Clinical Academic Careers are recognised as an essential development in the progression of influential, clinically focused NMAHP research. This research is critical in contributing to the evidence base to inform the delivery of sustainable and effective health and social care to the population of Scotland. Initiatives including Clinical Academic Research Career (CARC) Framework (1) and AHP Fellowships (2) have been developed with the aim of providing a sustainable structure to the benefit of service users and to improve the quality of clinically relevant NHS research. However for AHPs, increased capacity is still required.



## Benefits and Expected Outcomes

### 1. Service Providers:

DPT graduates will be embedded within clinical practice and therefore able to address key clinical research questions within services. Working in collaboration with other clinical colleagues, graduates will offer a variety of skills.



### 2. Service Users:

Benefit from increased research providing evidence based interventions and services. The graduates will be based in clinical practice and will have the research skills to address relevant clinical research questions, providing a direct benefit to service user outcomes.

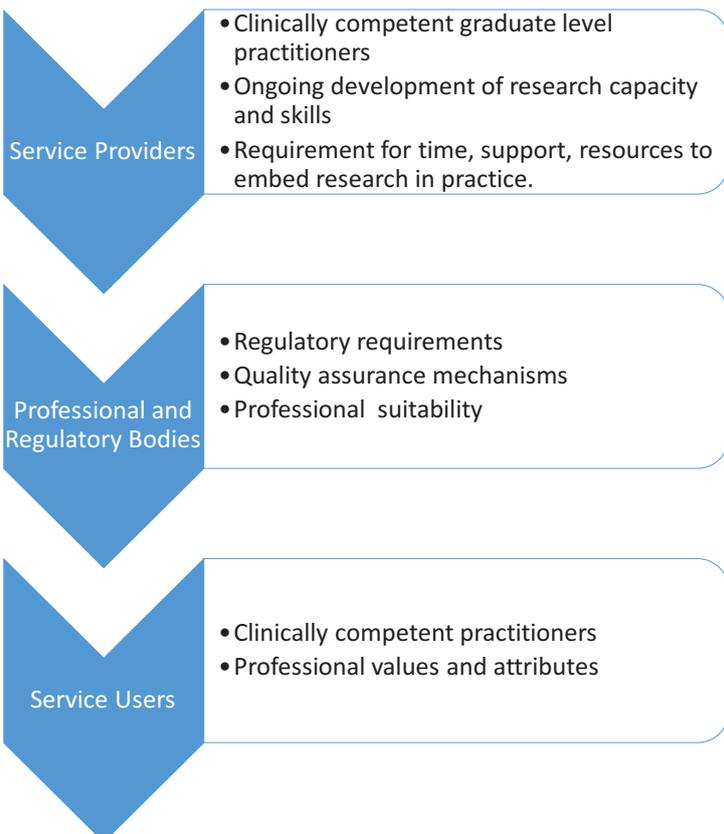


### 3. Professionals

Opportunity for integrated research, evidence informed practice, accessible research support and role modelling of research in practice.

## Educational Development: steps

Consultation with Key Stakeholders and inclusion of their requirements led to development of the DPT by integration of doctoral level research skills with a professional qualification.



## Key Messages

Collaboration between clinical and academic partners can inform curriculum development and innovation to address NMAHP key priorities to the benefit of service users.

## Next Steps: Impact and Evaluation

Outcomes, employment and career pathway from this new course will be monitored and evaluated as graduates enter and progress within the profession

References  
1. National Guidance for Clinical Academic Research Careers for Nursing, Midwifery and Allied Health Professions in Scotland (2010) NHS Education for Scotland  
2. Allied Health Professions Education Strategy 2015-2020 - The 2nd Edition (2015) NHS Education for Scotland,

# Occupation for Health: Collaboration with Third Sector Partners

Jude Bisset and Elaine Stewart

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## Background and Aim:

In considering anticipatory and preventative intervention and the integration of health and social care it is essential that occupational therapy students demonstrate and develop an awareness of the added value of third sector partnerships in supporting health and well being through purposeful occupation within communities.

## Methods:

In year 2 of the 4 year honours degree course occupational therapy students explore what inhibits/facilitates individuals' engagement in valued occupation. They immerse themselves in a community based third sector service over a 4 week period and are required to reflect on the value and importance attributed to occupation by the individuals utilising the service, exploring how 'occupation' in different settings influences individual's health and well being.

## Student Learning Outcomes:

- To explore what inhibits/facilitates engagement in valued occupation.
- To reflect on the value and importance attributed to occupation by individuals.
- To consider 'occupation' outwith occupational therapy and how this influences current & future learning and practice.
- To apply an occupational perspective to third sector partnerships.

## Results:

1. **Participants** : Four cohorts of 2<sup>nd</sup> Year BSc Hons Occupational Therapy students have worked in small groups with a variety of partner agencies in the Grampian area annually since April 2015.

2. **Learning** : These situated learning experiences have delivered an increased awareness for both students and third sector partners of the opportunities for and benefits of increased partnership working.

"I was inspired by their approach and achievements in empowering and enabling people to achieve their potential and lead satisfying and fulfilling lives"

"The students identified and valued the importance of our service to our service users"

"Awareness and insight of relevant organisations and agencies will be so important in occupational therapy practice to signpost individuals to appropriate and meaningful opportunities, services and support in the community"

"Contemporary placement was such a valuable learning and development experience in highlighting the vital role third sector organisations play in supporting local communities"

"Students bring new ideas and views and can teach us about the value of occupation"

"Having the students in our service had really enhanced the focus of occupation and has given a different perspective"



## Conclusions:

- **Students:** Developing partnerships outwith the 'traditional' model of health and social care delivery enhances both awareness and work readiness of student occupational therapists in supporting effective and efficient person centred occupation based practice.
- **Third Sector Partners:** Awareness of the breadth and diversity of occupational therapy and it's practice highlighting the potential for effective partnership working.

## Future Developments

- Increasing the timing to allow partners and students to identify, implement and evaluate specific projects.
- Involving other AHP students to develop a team experience.
- Widening the pool of third sector partners.
- Developing formal contemporary placement experiences.

# Enhancement of an integrated NHS 24 Induction Curriculum



A partnership with Glasgow Caledonian University and NHS 24

## Aim:

To improve the efficiency and effectiveness of the induction curriculum by facilitating learning for a diverse range of learners, underpinned by blended learning theories and teaching strategies.

The foundation of which is influenced by the key messages from the Healthcare Quality Strategy, the 2020 Vision and the Nursing 2030 Vision.



## Methods:

### Implementation of

- Conservative ideologies – lecture based aspects for the delivery of key information
- Progressive ideologies – promotion of learning through interaction and engagement
- Transformational leadership – balancing role modelling and emotional intelligence
- Development of a 'core' comprehensive 45 minute session
- Calendar of learning – one topic released each month to systematically develop essential knowledge for safe, effective and person centred care
- Development of an evaluation form

## Outcomes:

- Induction session
- Evidence based curriculum with clear teaching and learning strategies
- Reduced variation of content
- Effective and timely core curriculum
- Calendar of activity
- Systematic pathway of learning via the monthly calendar

## Conclusions:

This project identified opportunities to implement an evidence based core induction curriculum, with future considerations incorporating the feedback from ongoing evaluations and analysis.

## Authors:

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# Pre Registration Nursing and the Implementation of Physical Activity within Vulnerable groups.

Rachel Canning, Sylvia Johnstone, Cate O'Kane.

Physical Inactivity can have a profound effect on the increase of, Type 2 Diabetes, High Blood Pressure and Depression.  
(Scot Gov. 2017)

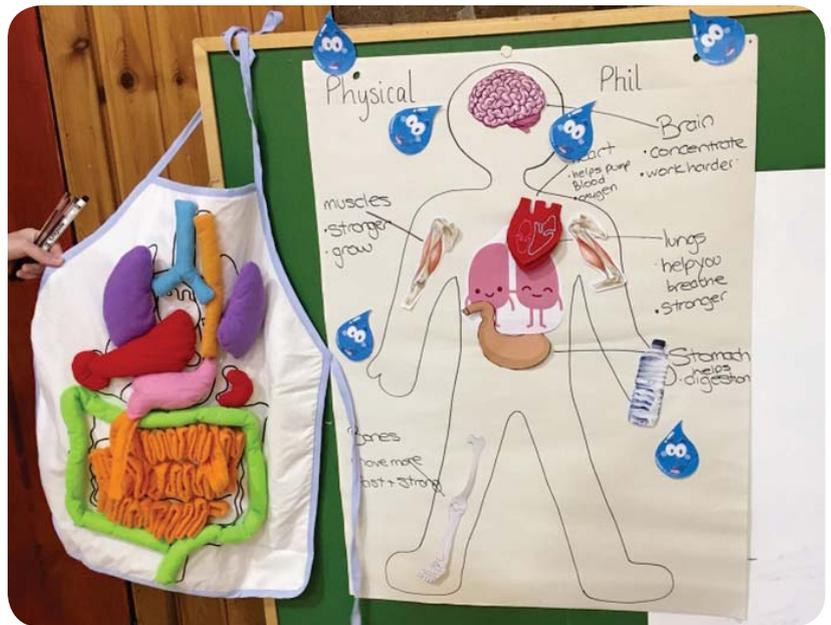
Government Guidelines suggest increasing Physical activity in Scotland to reduce the increase in long term conditions  
(Stay Active, keep Active, 2011)

Third year student nurses from UWS, planned and implemented a physical activity with children in an after school care club, aged 5 - 12 years.

This was in accordance to Curriculum for Excellence and GIRFEC.  
(CfE, 2017, GIRFEC, 2017)

Students implemented Fitness Intervention Taskforce from UWS.

This was well received and evaluated with positive feedback, which would suggest the longevity of this intervention.



## References

- Education Scotland (2018) Curriculum For Excellence. Available: [https://education.gov.scot/scottish-education-system/policy-for-scottish-education/policy-drivers/cfe-\(building-from-the-statement-appendix-incl-btc1-5\)/What%20is%20Curriculum%20for%20Excellence](https://education.gov.scot/scottish-education-system/policy-for-scottish-education/policy-drivers/cfe-(building-from-the-statement-appendix-incl-btc1-5)/What%20is%20Curriculum%20for%20Excellence) Accessed 29th March 2018.
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# Aberdeenshire Speech and Language Therapy Research and Improvement Group (RIG)



Aberdeenshire  
Health & Social Care  
Partnership

*Emma Coutts, Niall Watt,  
Zoe Roxburgh, Tasmin Macleod*



Current projects

Universal service  
development,  
e.g. phonological  
awareness

Service evaluation  
of education staff  
training, e.g.  
Makaton

Well-being in  
aphasia: impact  
of dog ownership

Ultrasound visual  
biofeedback  
project:  
ULTRAX2020

Parkinson's  
disease service  
development, e.g.  
Loud Crowd

## Group Remit:

- To provide peer support for designing and implementing projects
- To facilitate collaborative working within the wider team
- To advise on key contacts and resources
- To motivate and inspire other team members to engage in research and improvement projects
- To help team members turn pipe dreams into reality

## In the pipeline...

- Auditing and coordinating training needs within the team
- Supporting setting up and running of Journal Club and peer review
- Facilitating staff ideas for training and service improvement
- Enabling staff engagement with electronic resources and social media

# E-health leadership programme #ENMAHP #blogging



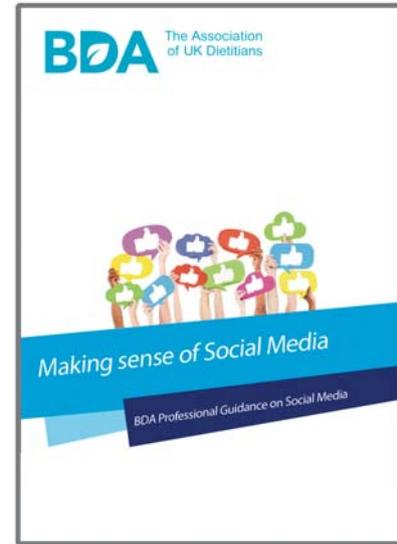
J. Teece, Dietitian, Department of Nutrition and Dietetics, Lynebank Hospital, NHS Fife, KY11 4UW.

## Background

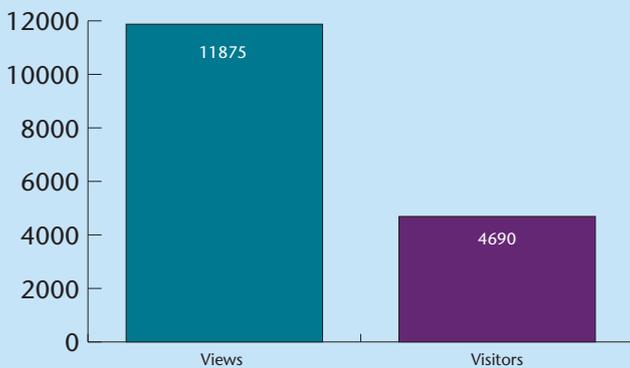
Social media is the fastest growing communication method of the 21st century<sup>1</sup>.

Bloggging can be defined as “where an individual or group of users record views in a long form, similar to and online diary”<sup>1</sup>

Its popularity has grown in recent years.



Popularity of AHPScot Blog, January to June 2016



## Aim/Rationale

To use e-health, in particular social media and blogging, as an innovative way to raise dietitians' profile and the e-health leadership programme.

## Methods

Guidance documents around the use of social media were used. I discussed peer review of blog submissions with my Professional Head of Service.

The blog was emailed and submitted to the AHPScot Blog moderator, programme leader of the e-health leadership programme and Professional Head of Service.

## Results

The blog entitled, “#eNMAHP #WhatIsItAllAbout? #DigitalAge #Innovation #VUCAWorld” was published May 1st 2017<sup>2</sup>. Twitter Analytics from @JoannaTeece, who retweeted the original post from AHPScotblog, showed it had 641 impressions and a 5.6% engagement rate. It was liked 10 times and retweeted 8 times.

## Conclusion

This experience showed using social media appropriately can be a positive way of sharing information.

A large number of people can be reached with limited effort, raising the profile of dietitians and post registration education and opportunities.

## Key messages

Social media used appropriately can be a positive way of sharing experiences and opportunities available for post registration education.

## Impact/Outcomes/Next Steps:

Within NHS Fife, we are looking at the campaign, <https://storify.com/DebbieProvanRD/what-dietitians-do> to use e-health to promote the Nutrition and Dietetic department and improve our use of e-health.

## References

- 1: British Dietetic Association. 2016 Making sense of Social Media [online] Available from [https://www.bda.uk.com/media/bda\\_professional\\_guidance\\_social\\_media](https://www.bda.uk.com/media/bda_professional_guidance_social_media)
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# Supporting Children's Early Language Development: A Collaborative approach to learning and development

Joanne Gibson, Speech and Language Therapist, NHS Lanarkshire

## Introduction

The link between social disadvantage and delayed early language development is well documented (1) with 50% of children reported to be starting school with delayed language development. (2) Yet a recent survey found only 1/3 of the children's workforce felt very confident in supporting children's speech, language and communication development. (3) In order to break this cycle of disadvantage it is recommended by the Royal College of Speech and Language Therapists (4) that all agencies work collaboratively to develop the skills and knowledge of the early years workforce. In this project Speech and Language Therapists and Early Years practitioners in North Lanarkshire worked together to deliver a training programme to all early years staff in Family Learning Centres.

## Aim & Objectives

The aim of the project was to develop the skills of the early years workforce in Family Learning Centres to support children's speech and language development. Speech and Language Therapists worked as part of integrated teams in early years settings to develop the skills of the early years Workforce in supporting children's early speech and language development using the Teacher Talk™ Training series, based on the evidence-based Hanen (Learning Language and Loving It) programme. (5)

## Methods

The Teacher Talk™ three day training series, whose strategies are drawn from Learning Language and Loving it™ - The Hanen Programme® for Early Childhood Educators was used in a cascade model and delivered jointly by SLTs and Early Years workers. Key individuals from 16 Family Learning Centres across Lanarkshire were identified and a network of communication champions was created who would promote and embed the learning in their setting. Communication Champions and SLTs worked together as part of integrated teams to deliver Teacher Talk™ to all members of the early years workforce in Family Learning Centres.

This involved three full days of training and video feedback sessions which would allow participants to reflect on their interaction and language promoting strategies and ensure the strategies were embedded into every day practice.

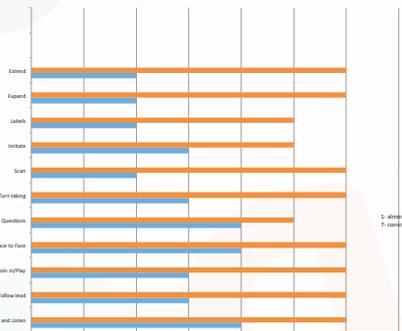


## Outcome

Over 200 early years practitioners in Lanarkshire have undertaken training on encouraging language development in early childhood settings using the Hanen Teacher Talk™ series. 16 Early Years workers have had advanced training and development and act as communication champions to promote communication and language in their setting. Each nursery setting has a link SLT to support and promote effective collaborative working. Video Reflections over the year have shown an improvement in Early Years workers skills in supporting language development which has impacted on children reaching their developmental milestones in communication. Early Years workers have indicated increased confidence in their knowledge and skills. The collaborative approach to learning/joint delivery has supported learning into action. Reflection has been a key approach to the learning and will continue to ensure that learning is embedded into every day practice.



Total number of Early Years staff trained Hanen - Teacher Talk™ Module A.



Application of Hanen - Teacher Talk™ strategies following video reflections in Forgewood Family Learning Centre.

Collaboration and joint delivery of the evidence based training programme provided a joint focus for collaboration and allowed all perspectives to be considered. All practitioners used the same, consistent language with the removal of any jargon. Positive, supportive relationships and strategic vision provided a platform for the training to be cascaded. Video coaching and opportunities for reflection allowed for the training to be embedded into practice.

**"Collaboration is the blending of knowledge, perspectives, ideas and experiences."**  
(Wilson et al 2015)

"It has given us a joint focus and helped to build relationships" - SLT

Total number of Early Years staff trained

"Working alongside an SLT means it is much easier to ask questions and share discussions on a regular basis." - Communication Champion

"Joint delivery of training means everyone's perspectives can be included and makes it more meaningful for participants" - SLT

**References:**  
 1. All Party Parliamentary Group on Speech and Language Difficulties. The links between speech, language and communication needs and social disadvantage. London: UK Parliament; 2013. Cited 2018 Feb. Available from: [https://www.rcslt.org/governments/docs/all\\_party\\_parliamentary\\_group\\_on\\_sclr\\_inquiry\\_report](https://www.rcslt.org/governments/docs/all_party_parliamentary_group_on_sclr_inquiry_report)  
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 Wilson, L., McNeill, B. and Gilton, C., 2015. The knowledge and perceptions of prospective teachers and speech language therapists in collaborative language and literacy instruction. Child Language Teaching and Therapy.



# A teaching aid for radiographic trauma recognition: its use by Radiographers, Emergency Nurse Practitioners and Virtual Clinic Trauma Co-ordinators.

Jonathan McConnell, Ruth Easton, Lianne Boyce,  
Kirsteen Graham, Graham Johnstone.

## Introduction

Delays exist in radiology report turn around for trauma presentations<sup>1</sup>. This system is used to educate a range of staff to immediately evaluate images and provide a comment. This is an extension of the well known 'Red dot' abnormality highlighting system and added to role scopes by the College of Radiographers<sup>2</sup> and forms part of the proficiency statements of the Health and Care Professions Council<sup>3</sup>. The system enables consideration of other radiographic views to aid diagnosis as radiographer interpretive skills are increased. The system has been used to provide a baseline understanding of Emergency Nurse Practitioner (ENP) and trainee orthopaedic Virtual Clinic Trauma Co-ordinator (VCTC) performance. The educational package has been designed for self used as a CPD tool to aid interpretation development so immediate services can be improved and, through virtual orthopaedic clinics, confirm correct treatment decisions are enacted.

## Description of the work:

Staff from all groups completed a baseline test to establish initial performance. Measurements were repeated after a period of education using the package to establish if radiographers (n=14) could contribute by initial commenting on images. Subsequent immediate interpretations by radiographers were measured to establish efficacy of performance.

Trainee VCTCs (n=5) received the initial baseline testing and educational treatment to include a face to face session with the consultant radiographer. Measurement to follow up the impact of the package could not be performed but the material was available for on-going CPD.

ENPs (n=9), from a nurse led Minor Injuries Unit, received the baseline testing without further teaching input due to their initial education as ENPs. Results were presented to enable self identification of where their CPD requirements needed updating through use of the educational package.

## Content of the educational package

The educational package comprised of:

- Four booklets divided into
  - Radiographic appearances of skeletal disease
  - Trauma of the upper limb
  - Trauma of the lower limb
  - Trauma to the spine and facial skeleton
- Supporting powerpoint presentations for each booklet
- Image viewing powerpoints to reinforce the learning from the booklets and provide a range of imaging examples across the breadth of trauma
- A final quiz
- A baseline test that was applied initially (and after for radiographers) to establish performance ability and any change post education
- A Microsoft excel<sup>®</sup> spreadsheet designed to produce statistics of clinical value

## Results

The Microsoft excel<sup>®</sup> spreadsheet, developed to calculate a range of clinical important values, was applied to the:

- Baseline test for all participants

The following values were calculated:

**Sensitivity %** (ability to spot abnormal)

**Specificity %** (ability to accept normal appearances)

**Accuracy %** (combined score of above)<sup>4</sup>

	Group score Radiographers n=14			ENPs n=9			VCTC n=5		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Sensitivity %	86.1	77.3	95.5	89.7	82.6	95.7	85.8	73.7	92.1
Specificity %	84.4	63.9	97.2	75.9	60.0	88.6	75.8	68.2	90.6
Accuracy %	85.0	74.1	91.4	81.2	72.4	89.7	79.0	75.6	85.4

**PPV** (Positive predictive value – the proportion of those positive for injury/abnormality that have been correctly diagnosed)

**NPV** (Negative predictive value – the proportion of those negative for injury/abnormality that have been correctly diagnosed)

**Likelihood ratio +ve** – the likelihood that a given test result (positive in this case) would be expected in a patient with the target injury/abnormality when images are read by the person tested

**Likelihood ratio -ve** - the likelihood that a given test result (negative in this case) would be expected in a patient with the target injury/abnormality when images are read by the person tested<sup>5</sup>

	Group score Radiographers n=14			ENPs n=9			VCTC n=5		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
PPV %	78.00	64.00	87.00	72.00	60.00	84.00	63.00	56.00	78.00
NPV %	90.00	83.00	97.00	91.00	87.00	96.00	93.00	89.00	95.00
Likelihood +ve	6.21	2.68	10.91	3.55	2.28	7.99	4.13	2.90	7.83
Likelihood -ve	0.16	0.05	0.31	0.14	0.06	0.23	0.18	0.11	0.29

**KAPPA – a way of testing agreement between the known best performance and that under test**

**Wtd Kappa** – a version of Kappa that accounts for guessing

**Bias and Prevalence Adjusted Kappa (BPK)** – a version of Kappa accounting for the impact that bias (amount of YES agreement) and prevalence (amount of YES and NO agreement) has on the Kappa value

**AC1 Statistic (AC1)** – a re-worked version of Kappa for chance choices being too high. This measure accounts for this problem.<sup>6-8</sup>

	Group score Radiographers n=14			ENPs n=9			VCTC n=5		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Wtd Kappa	0.698	0.494	0.912	0.626	0.471	0.787	0.561	0.514	0.652
BPK	0.714	0.494	0.906	0.782	0.644	0.911	0.681	0.374	0.830
AC1 Statistic	0.703	0.484	0.838	0.629	0.448	0.799	0.606	0.529	0.747

The last two values are required to support the original Kappa value so that we can understand how close an individual reader was to the gold standard of the radiologist's consensus for the test. Landis and Koch suggested the following values for levels of agreement between observers for given kappa values. They are:

- 0 – 0.2 = slight
- 0.21 – 0.4 = fair
- 0.41 – 0.6 = moderate
- 0.61 – 0.8 = substantial
- 0.81 – 1.0 = almost perfect<sup>9</sup>

## Putting it into action

Following the education radiographers from Vale of Leven (VoL), that has limited on site radiologist support, and from Queen Elizabeth University Hospital began providing comments to the Minor Injuries ENPs and the Emergency Departments respectively. Results were audited as a format of the education approach (VoL as they were the pilot site) and as a condensed version to show sensitivity, specificity and accuracy in QEUH.

### VoL Month 1 commenting results

Sensitivity %	88.16
Specificity %	98.48
Accuracy %	94.71
PPV %	97.00
NPV %	94.00
Likelihood +ve	44.08 Highly significant
Likelihood -ve	0.12 Almost highly significant
Weighted Kappa	0.884 Almost perfect
BPK	0.793 Substantial agreement
AC1 Statistic	0.903 Almost perfect

### QEUH Comments

Total selected	900		
		<b>Total</b>	
Sensitivity %		95.50	91.00
Specificity %		97.65	96.50
Accuracy %		97.50	96.00
			99.00

Positive feedback and subsequent use of the education package has been received from Nursing and Virtual Clinic Colleagues. Work is still on-going to prepare all radiographers though there are continued feelings of uncertainty from some colleagues about their position legally in providing this extension to abnormality highlighting despite the position of the professional and registration bodies.

## Conclusion

All staff performed to a high baseline level, with radiographer input demonstrating strongest performance. ENPs valued the opportunity to know what their performance was. Trainee VCTCs demonstrated a safe level of performance whatever their initial experiential background.

## Impact/Outcomes/Next Steps

The system continues to be rolled out as immediate commenting by radiographers. Further uptake by ENP and future VCTCs is recommended. Patients receive an improved image interpretation service with resultant improvement in management and potentially fewer re-calls.

Virtual clinics now operate with improved certainty of the initial image based diagnosis. Patients receive a more assured service with improved working between professional groups.

**This system, with input from other professional groups referring to the radiology department could be extended to other areas of practice to address the reporting backlog and auto reporting approach that is currently under review in England<sup>10</sup>.**

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