

# Building a research programme on an e-portfolio evidence-base



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supports education & training of healthcare staff

created e-portfolio in 2005

- pilot with 400 medical foundation trainees
- external evaluation: time pressure; "formalising achievement"
- development, expansion

NES e-portfolio 2008:

- 35,000 trainee health professionals
- 20 bespoke versions
  - trainee doctors across UK
  - 7 UK Royal Colleges of medicine
  - Scottish dental practitioners, trainees & undergraduates
  - Scottish pharmacists

## e-portfolios: published evidence



- recent explosion in publications
  - useful and effective?
  - systematic review, journal debate

"asking whether learning portfolios are good for learning or assessment is a bit like asking whether drugs are good for treating disease" Geoff Norman BMJ 2008

- findings:
  - can support range of learning
  - effectiveness depends on individual learner, clear purpose, good implementation, consistent support
  - further robust generalisable research required

## phase I - audit Scottish foundation trainees 2007/8



- retrospective analysis of use
- anonymised, linked data
- monitoring, QA, service development

Objectives:

1. determine if trainees & support staff met requirements
  - clinical & non-clinical assessments
  - achievement of competency
2. describe how trainees used learning tools
  - use of flexible tools
3. explore relationships between quantitative elements

## practicalities extracting the data



- large, complex database
- designed for flexibility at individual level
- multiple internal linking methods
  - personID (n=825), GMC (n=800), postID (n=2438)
  - a challenge to meaningfully collate & group data
- system responsive, continually active
  - trainees entering / leaving system
  - ongoing maintenance
  - never perfect 'stable' dataset

## considerations using the data



- sensitivity: contains personal data
  - even with name / address fields removed
- guidance from data protection advisor & research governance committee
  - clear purpose to each phase - users informed
  - ethical approval to be sought at appropriate time
- extracted data requires 'sense check' with users
- free-text fields
  - limitations: rapid group analysis not possible
  - importance: gives context



## audit objective 1

### determine if trainees & staff met e-portfolio requirements

submission of clinical / non-clinical assessments  
quality rated by appropriate assessors

## e-portfolio requirements

1st year trainees (FY1)	Post 1	Post 2	Post 3
<b>Workplace Assessments</b>	15 throughout year	15 throughout year	15 throughout year
<b>Educational Log</b>	throughout year	throughout year	throughout year
<b>Multi-Source Feedback</b>	4 + Self	0	4 + Self
<b>Significant Event Analysis</b>	0	1 public & reviewed by Ed Sup	0
<b>Personal Development Plan</b>	throughout year	throughout year	throughout year
<b>Supervisors Report</b>	1	1	1
<b>Certificate of Performance</b>	1	1	1

## Work Place Assessments

Assessment of clinical competence & confidence  
 Trainee nominates 'most appropriate' assessor to rate

Requirement:  
 FY1: 15 required procedures e.g.

- Arterial blood sampling in an adult
- Basic CPR & airway management

FY2: 6 required procedures e.g.

- Safe administration of oxygen
- Apply principles of infection control

95% of FY1 trainees ✓  
 77% of FY2 trainees ✓

## Work Place Assessments

	total no. of submitted WPAs	average rating score	low scoring items per WPA item	no. of items submitted more than once by trainee	trainees who submitted no WPAs
1 <sup>st</sup> year (FY1)	n=11,635	6.38 (all) range: 6.24-6.48	range: 5 - 19 scores	range: 77 to 382	n=7 (0.9%)
2 <sup>nd</sup> year (FY2)	n=3,959	6.31 (all) range: 6.11-6.49	range: 5 - 15 scores	range: 77 to 128	n=53 (6.5%)

## Multi-Source Feedback

360 degree appraisal by self / peer in 22 areas e.g.:

- professional relationship with patient
- communication & team working
- clinical care
- probity & health

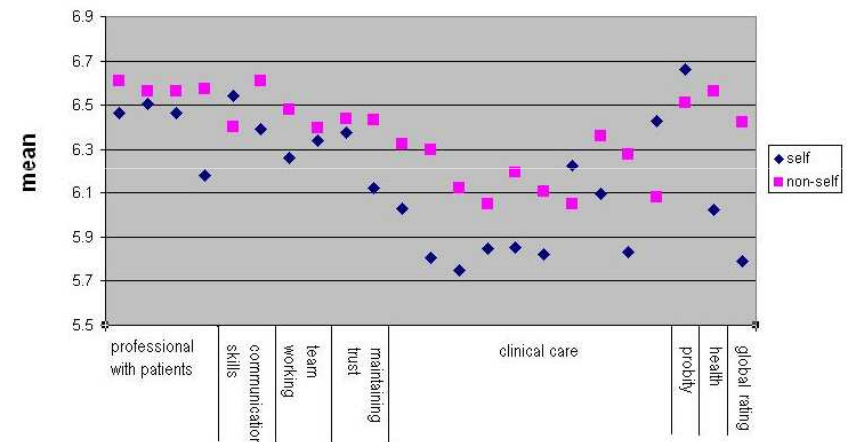
4 assessors of different roles chosen by trainee

requirements:

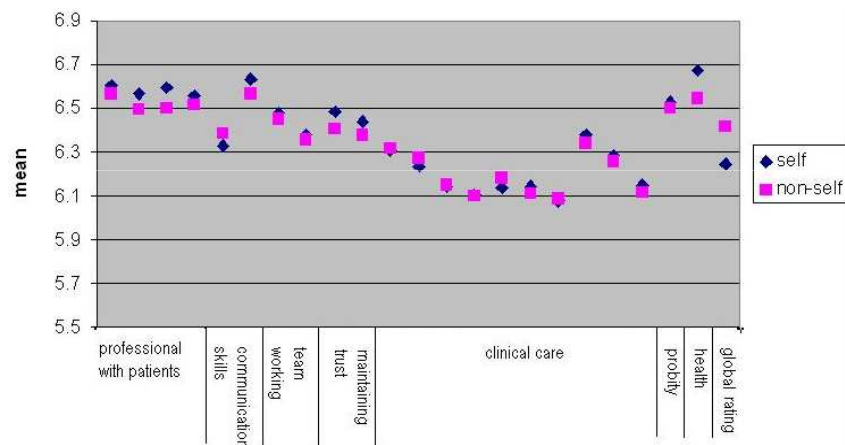
- FY1: 4 non-self + 1 self x 2
- FY2: 4 non-self + 1 self

78% of FY1 trainees ✓  
 72% of FY2 trainees ✓

## Multi-Source Feedback scores FY1



## Multi-Source Feedback scores FY2



## achievement of competency

Educational Supervisor indicates trainee has achieved required standard during post

Scored across 12 areas including:

- clinical care: history, examination & problem solving
- acute care: assessment & management
- communication: patients & team
- evidence-based medicine & audit

requirement:

FY1 & 2: 1 supervisor's report per post

91% of FY1 posts ✓

90% of FY2 posts ✓

## audit objective 2



## describe how trainees used flexible learning tools

record of learning events  
description & reflection by trainee

## Significant Event Analysis

qualitative method of clinical audit

- trainee describes & reflects on an individual case study or event - part of everyday practice
- events do not have to be critical or adverse; can be positive experiences - "no blame" culture

private or shared > reviewed by Ed. Supervisor

requirement:

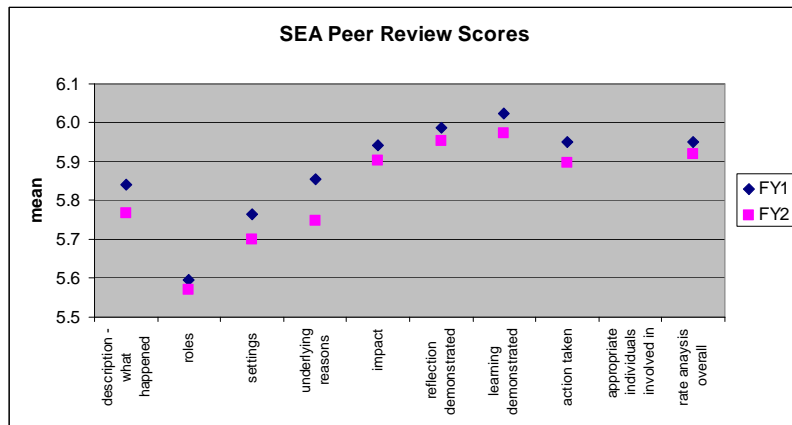
FY1: 1 reviewed SEA

FY2: 2 reviewed SEAs

61% of FY1 trainees ✓

47% of FY2 trainees ✓

## Significant Event Analysis peer review scores – FY1 & 2



## educational log

flexible record of trainee's learning events  
provides template for description & reflection on learning

- tutorials attended
- courses undertaken
- papers read

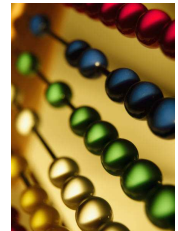
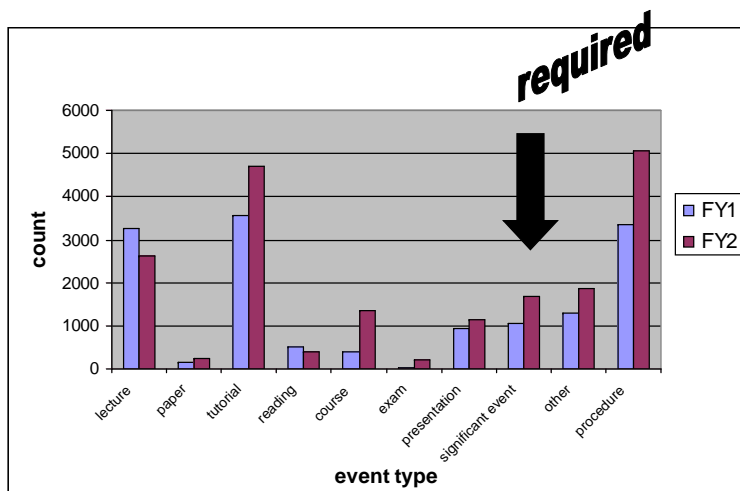
requirement:

FY1 & 2: use of log

96% of FY1 trainees ✓  
93% of FY2 trainees ✓

excluding SEA:  
74% of FY1 trainees ✓  
76% of FY2 trainees ✓

## educational log submitted events – FY1 & 2



## audit objective 3

explore relationships between  
e-portfolio data

quantitative assessment scores  
common elements across tools

## exploring relationships between data

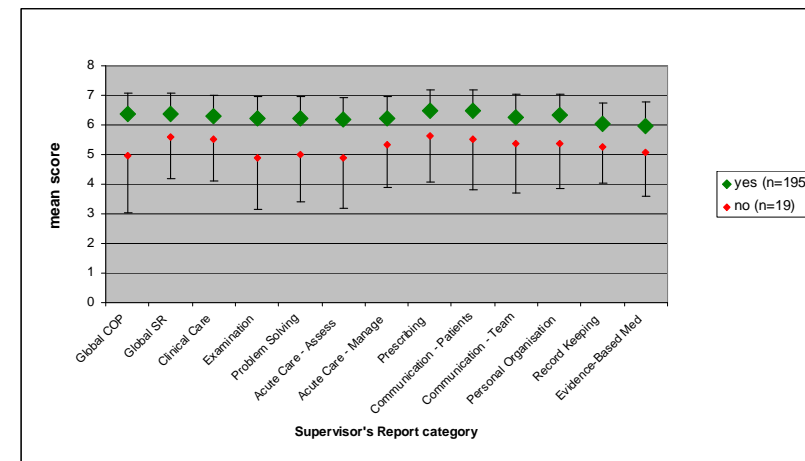


Certificate of Performance: "standard reached" vs WPA, MSF self / non-self; SEA peer review, SR, COP

- ordinal / dichotomous data
- very large difference in group sizes
- Spearman's coefficient (point biserial)

Spearman's rho	COP – FY1 reached standard during post	MSF - global rating (non-self) submitted within post dates
Correlation Coefficient	1.000	0.042**
Sig. (2-tailed)	.	0.000
N	7680	7152
**. Correlation is significant at the 0.01 level (2-tailed)		

## relationship between COP & SR FY2



## phase II prospective research



still required:

- wider investigation of e-portfolio usage
- ethical approval
- prospective research questions
- generalisable findings
- mixed methods
  - further e-portfolio data analysis – prioritised by experts
  - structured interviews with users / supervisors / programme managers
  - free-text analysis

## phase II - prospective research beyond Scottish Foundation



long term work:

- collaboration outwith Scotland
- potential to compare UK regions & portfolio versions
- comparison between assessment tools
  - test validity, reliability, predictability
  - ensure use of most efficient, effective methods of medical assessment
  - ideally link to ongoing outcomes: educational / career / healthcare delivery

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