Medical Education
Innovations in a Cost-Constrained Environment

Kieran Walsh
Welcome – but what’s it all about?

For every penny spent on medical education

Do we get benefit?

Learner, provider, commissioner, funder
Might write this up as a report of a symposium

If anyone would like to join me in co-authoring this, let me know

If anyone has any concerns about this, let me know

Depending on how it all goes ....

Also you are welcome to the slides and papers
Medical education innovations and controlling costs

• Background
• Case studies – e-learning, simulation
Truth 1

• Medical education is expensive
• Cost of medical education
  UK ?
  Internationally ?
• No one knows how much more
• Getting more expensive > inflation
• Especially expensive in the West - ?
• Most expensive country / least?
• Value??
Truth 2 – medical education of the past is going out to pasture

“A first year medical student recently commented to me that in every lecture he attended he fell asleep after 45 minutes or so. Of course, with my years of experience of medical education I reassured him that with time and some effort he would be able to achieve this in as little as ten minutes or less.”

Eugene Milne
Truth 2 – medical education of the past is going out to pasture

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Eugene Milne

Reassuring you are all still awake ... Early days ...
## Truth 2 – progress in working out “what works” in medical education

<table>
<thead>
<tr>
<th>The past</th>
<th>Now</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passive</td>
<td>Active</td>
</tr>
<tr>
<td>Different agendas</td>
<td>Evidence based</td>
</tr>
<tr>
<td>Learning things you don’t need to know</td>
<td>Curriculum driven</td>
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<tr>
<td>Not learning things you need to know</td>
<td>Needs based</td>
</tr>
<tr>
<td>One size fits all</td>
<td>Learner centric</td>
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<tr>
<td>Points driven</td>
<td>Tailored</td>
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<tr>
<td>Just clinical</td>
<td>Communication, team</td>
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</table>
Truth 2 – progress in working out “what works” in medical education

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<thead>
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<th>Now</th>
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</thead>
<tbody>
<tr>
<td>Practise on patients</td>
<td>Simulation</td>
</tr>
<tr>
<td>Using the same formats</td>
<td>Blended learning</td>
</tr>
<tr>
<td>Not knowing</td>
<td>Feedback driven</td>
</tr>
<tr>
<td>Take it or leave it</td>
<td>Evaluated</td>
</tr>
<tr>
<td>Academic</td>
<td>Quality improvement and patient safety</td>
</tr>
</tbody>
</table>
The debate is moving on ...

What works

What works for a given cost
Truth 3 - we don’t know what constitutes value for a given cost

| High cost | High cost |
| Low value | High value |

| Low cost | Low cost |
| Low value | High value |
Truth 3 - we don’t know what constitutes value for a given cost
Remarkable state of affairs

£5 billion
- too much / little
- sufficient benefit / insufficient

“unknown unknown”?
Truth 4 . . . because we don’t really know what the costs are and we don’t have cost analyses tools and we haven’t really tried and we have little experience

Until now
Ground rules ... For my talk

• Cost = financial cost ..... human cost
• Cost = cost . . . not institutional acceptance/ our way of doing things/ feasibility / other such words
• Evidence-based > emotional arguments (education = motherhood and apple pie)
• Not a cost cutting guide OR an argument for investment
  - Ideologically neutral
  - Book – cut or invest ...
Costs

• Is not price \( (\text{cost} + \text{profit}) \)
• Is not expenditure

• Is opportunity cost

• What is opportunity cost?
Costs

- Is not price \( (\text{cost + profit}) \)
- Is not expenditure
- Is opportunity cost

- What is opportunity cost?
- Not money – the cost of not doing something else
Case studies

- E-learning
- Simulation
E-learning – 3 questions

• Does it work?
• What are the costs?
• How can we ensure more value for a given cost?
E-learning – does it work?

- Probably
- Many different forms already – reductionist
- As well as face to face learning – faint praise?

- Real attractiveness is not that it is better than face to face – more later
E-learning - what are the costs?

• Provider costs
• Learner costs
• Out of the frame
• Lets take them one by one
• Perspective is important! Whose cost?
E-learning - provider costs

- Website build
- Content – from text to virtual worlds .. populate
- Hosting .. small
E-learning - learner costs
E-learning - learner costs

“Free e-learning resources”!? No such thing
E-learning - learner costs

- Hardware
- Software
- Depreciation ... and maintenance
- Internet connection .. BB
- Electricity, lighting . . .
- Wages .. if learning at work

- Should you worry about this?
- Could you say – “that’s your problem”?
E-learning - out of the frame

• Trainer accommodation
• Trainer travel and subsistence
• Learner accommodation
• Learner travel and subsistence
• Classrooms
• Equipment
• Off-the-job time
• Print costs

Happy slide – convenience and cost – exploit these features
E-learning - how can we ensure more value for a given cost?

- Scale up content - populate
- Enable usage – 10/100/1000
- Map the content format to the outcome
- Interactive cases
- Just in time - ak
- Podcast
- Multimedia - behaviours
- Don’t be seduced by technology - Princeton
- Share – institutions / teams
- Needs assessment
- Make it interprofessional
Simulation – new case study – same 3 questions

• Does it work?
• What are the costs?
• How can we ensure more value for a given cost?
Simulation - does it work?

1901 - 1909 -
Simulation - does it work?

- Integrated skills – clinical and communication integrate
- Practise and rehearse – as often as you like
- Safe for patient and learner – environment
- Patient expectations – training
- Patient safety
- Interprofessional
- Rare but important events – cardiac arrest in young
- Assessment
Simulation - what are the costs?
Simulation - what are the costs?

- Hardware
- Software
- Trainers
- Learners
- Patients

- TCO ??

- Car .... Simulation centre
Simulation – how can we ensure more value for a given cost?

• Don’t be seduced by fidelity – commercial jet simulators
• Don’t be seduced by technology
• Don’t confuse fidelity with technology - GP
• Use the correct simulation for the task - part task / assessment
• Use the simulation to max capability neurosurgery
• Mobile simulation
• Share
• Ensure / enable usage – gym??
Costing an educational programme
Gathering costs – ingredients approach

First step

Like cooking
Gathering costs – ingredients approach

• Must be comprehensive and exhaustive
• If anything is missed out, everything else will be wrong
• This is the denominator in your sum
Gathering costs – ingredients approach

• Identify all ingredients
• Even if they are free to you

• WHY?
Gathering costs – ingredients approach

• Identify all ingredients
• Even if they are free to you

• Because they may not be free to everyone … who wants to replicate your programme
Gathering costs – ingredients approach

- **Personnel**
  - Facilities
  - Equipment and consumables
  - Learner inputs?
  - Others

- Personnel – 70%
- Hi cost – hi value
Gathering costs – ingredients approach

- **Personnel**
  - Pay closest attention to the biggest cost (personnel)
  - A small error here will have a big effect overall
How to identify ingredients

Become intimately familiar with the educational programme

• Programme documentation
• Interviewing the participants
• Observing the programme in action (planned, delivered, received curriculum)
Assign a cost to each ingredient
and add them up
Reporting costs

• In monetary terms

But

• Currency
• Inflation
• Education and cost practices
Reporting costs

In educational terms
- 100 hours of a senior lecturer’s time
- 10 hours in a 50 seat lecture hall
Cost analysis tools: Cost-

- Effectiveness
- Utility
- Feasibility
- Benefit
Cost benefit

• “The evaluation of alternatives according to their costs and benefits when each is measured in monetary terms”
• Enable us to discover if any particular intervention on its own has benefits that exceed its costs
• Enable us to compare the costs and benefits of interventions with different outcomes
• Enable us to compare the costs and benefits of widely differing types of interventions in completely different areas
• Rely entirely on our ability to measure costs and benefits in monetary terms
• Causality
<table>
<thead>
<tr>
<th></th>
<th>Costs</th>
<th>Outcome</th>
<th>Benefit</th>
<th>Total benefits</th>
<th>Net benefit (total benefits – costs)</th>
</tr>
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<tbody>
<tr>
<td>Simulation-based education</td>
<td>£20 000</td>
<td>8 complaints prevented</td>
<td>Benefit per complaint prevented = £1000</td>
<td>£8000</td>
<td>–£12 000</td>
</tr>
<tr>
<td>Communication skills teaching</td>
<td>£10 000</td>
<td>12 complaints prevented</td>
<td>Benefit per complaint prevented = £1000</td>
<td>£12 000</td>
<td>+£2000</td>
</tr>
<tr>
<td>Team-based learning</td>
<td>£25 000</td>
<td>5 medical accidents prevented</td>
<td>Benefit per medical accident prevented = £10 000</td>
<td>£50 000</td>
<td>+£25 000</td>
</tr>
<tr>
<td>Quality improvement education</td>
<td>£50 000</td>
<td>7 medical accidents prevented</td>
<td>Benefit per medical accident prevented = £10 000</td>
<td>£70 000</td>
<td>+£20 000</td>
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Cost analyses can guide decision making but they should not necessarily make the decisions for us.

You can have the most expensive option if you wish.
Why is this important?

- Payer
- Individual
- Institution
- Government
A new problem?

• 1893 paper
• Person studying medicine
• Young person studying medicine
• Young man studying medicine
• Young gentleman studying medicine
• Young gentleman from rich family studying medicine
• Young gentleman from rich family studying medicine in London
• Young gentleman from rich family studying medicine to pass exams and save money and get a high paying job in London
<table>
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Strategy – this is what we must do

• Individual studies - modest - realistic and achievable - tactical

• A series of systematic reviews

• Programmes to further the methodology

• Centres of excellence of cost and value in medical education

• Research programmes involving collaborations
The frontier


Walsh K. Sequential testing: costs and cost savings may be greater. Med Educ. 2011 Dec;45(12):1262.


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