

# **DEVELOPING A CO-ORDINATED RESEARCH STRATEGY FOR CHILD HEALTH RELATED SIMULATION IN THE UK: PHASE ONE**

## **Corresponding Author:**

Dr. Damian Roland

SAPPHIRE GROUP, Health Sciences, Leicester University, Princess Road West,  
Leicester, LE1 6TP

E-mail: dr989@le.ac.uk

Phone: 07727158213

Dr. Helen Wilson, University Hospital Southampton NHS Foundation Trust, SNAPS Group  
Southampton, United Kingdom

Dr. Nicola Holme, Leeds Royal Infirmary, Leeds, United Kingdom

Dr. Kim Sykes, University Hospital Southampton NHS Foundation Trust, SNAPS Group  
Southampton, United Kingdom

Prof. Ben Shaw, Liverpool Women's Hospital, Liverpool, United Kingdom

Prof. Ralph MacKinnon, Manchester Children's Hospital, Manchester, United Kingdom

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The explosion of simulation in health care education has been embraced by all disciplines and specialties; within paediatrics there are already established centres using state of the art equipment and, importantly, well trained and experienced faculty. However between regions in the UK there are differences in availability, uptake and utilisation of simulation-based training. Research related to simulation whether educational, technological or outcome focused, seems to be carried out on an ad hoc basis. The Royal College of Paediatrics and Child Health (RCPCH) have appointed a lead for simulation who chairs the RCPCH simulation working group. As part of this a research sub-group has been created. The first aim of this group was to quantify the extent and content of child health relevant simulation research that has been undertaken in the UK in the last decade.

A literature search of EMBASE, MEDLINE and Web of SCIENCE using key terms [Simulation and Child Health] was undertaken for the years 2002-2013. In conjunction with a senior clinical librarian MESH and subheadings were used to ensure all possible variations of the key terms were included in the search. Three reviewers searched through resulting abstracts to select suitable articles. Inclusion criteria were United Kingdom based studies evaluating paediatric or neonatal simulation. Commentary and essay papers were excluded. Areas of disagreement were discussed and consensus decisions made. Articles were then reviewed in full with core information extracted [age group of simulated subject or patient high or low fidelity and outcome level assessed (based on Kirkpatrick<sup>1</sup>'s training outcome hierarchy)

The initial search revealed 2266 abstracts of which 57 abstracts met the inclusion criteria. On full paper review 32 papers were suitable for coding (table 1). Authors reviewed 6-7 papers each except the corresponding author who reviewed all. There were only 2 coding discrepancies (of Paediatric group theme) which were resolved by consensus). Two main themes emerging from this review are an absence of research co-ordination (infrequency of serial papers on similar theme) and a wide variety of subject matter (from neonates to late adolescence). The most frequently published simulation intervention evaluates obstetric and neonatal management around safe delivery of infants. There are a large variety of educational outcomes, with often only Kirkpatrick 1 and 2 outcomes being assessed. Given the diversity of outcomes and methods used it was not possible to draw conclusions with respect to the overall impact of the studies although, of note, none reported negative outcomes.

Despite the increasing use of simulation as an educational tool there remains a paucity of high quality research into its effectiveness. This supports the work of the Health Education England Technology Enhanced Learning Hub<sup>2</sup> in promoting the translation of simulation work that is known to be occurring into research and academic outputs. Our review of the literature will enable a benchmark against which the future progress of a UK simulation strategy can be judged. It will also enable a directory of interested healthcare professionals and educators to be created allowing for future collaboration and development of research programmes. This will ensure there is not unnecessary duplication of work but support much need serial research into common themes and the creation of robust outcome measures. This is the first stage of a long-term project,

which aims to develop and support collaborative simulation research to address participants' curriculum needs, broader inter-professional development needs including crisis resource management/human factors training and engender change which demonstrably impacts on patient care.

Table One - outcomes of coding themes

<b>Theme</b>	<b>Category</b>	<b>Result</b> (numbers/percentage)
Paediatric Group	Obstetric/Neonate Neonates Paediatrics Involved multiple groups	4 (12.5%) 8 (25.0%) 4 (12.5%) 16 (50.0%)
Intervention Level	Low Fidelity High Fidelity	22 (68.7%) 11 (31.3%)
Outcome Level	Kirkpatrick 1 (learner satisfaction) Kirkpatrick 2 (knowledge gain) Kirkpatrick 3 (behavioural change) Kirkpatrick 4 (overall system change or patient benefit)	12 (37.5%) 18 (56.2%) 0 (0.0%) 2(6.3%)

## References

1. Kirkpatrick D, Kirkpatrick J. Evaluating Training Programs: The Four Levels. 3rd ed. San Francisco: Berrett-Koehler Publishers, Inc.; 2006.
2. Simulation, m-learning, e-learning. Health Education England. <http://hee.nhs.uk/wp-content/blogs.dir/321/files/2013/11/TEI-E-Brochure-5-12-131.pdf> website last accessed 19th November 2014