Transforming Medical Education with Immersive, Virtual Clinical Environments

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• Develop Immersive Patient Simulations in Virtual Clinical Environments.
• Long-term, multicentre, multidisciplinary assessment of the impact of Virtual Clinical Environments on medical students from pre-intake to established practice.
• Evaluate student acquisition and development of knowledge, skills and attitudes.
• Bring together current developments in emerging anatomical and physiological e-simulations, interactive virtual patients and virtual clinics towards a common medical curriculum.

TRANSFORM MEDICAL EDUCATION

[Diagram depicting a continuum of competency from lecture, small group, CAI to real patient, with stages including core knowledge, clinical reasoning, history, exam, counseling, procedures, teams, high risk, and hands-on patient care.]
Ambition

- 2020 – “major societal goal is to live longer in better health” – ISTAG (ICT Advisory Group), July 2009.

- Health is the major determinant of well being and life satisfaction. It is key to economic productivity and competitiveness.

- The medical profession faces challenges of accountability and scrutiny of competency whilst suffering increasing training constraints: budget, reduced student-patient contact, decreased patient time in hospital.

- Pedagogically training needs to mimic as closely as possible the role of the practitioner and provide students with self-directed personalised learning opportunities.

- High demand for medical education that is community- and patient-centred.

Intention: Provide a realistic immersive working environment for confident and safe practice with virtual patient encounters and management.
Integration

Four inter-disciplinary strands to create and evaluate curriculum transformation:

• Clinical
• Educational
• ICT
• Professionalism/Social studies

Several universities are already beginning to adopt virtual patients and e-simulations and integrate them into the heart of curriculum (e.g. the G4 project [http://www.elu.sgul.ac.uk/g4/]).
Impact

• Revolutionise medical training by placing the patient at the centre of the educational process.

• **Provide safe practice** to protect against reducing opportunity for students to rehearse their future competencies.

• Take forward existing **national and European initiatives**

• Move towards **unified EU curriculum** for medical education.

• Provide a new **control mechanism for the cost** of medical and healthcare education.

• Create a **research environment** for evaluation of both medical training and treatment procedures.

• **Transfer beyond medical education** – other competency-based disciplines.
Plausibility

- The various tools needed to construct future developments are in the early stages of development, some have been fully implemented in the curriculum.

- Future-proof solutions can be delivered by building on the evidence base from recent projects in curriculum development and cross-cultural sharing of resource.
  - EC: eViP and mEducator (eContentplus), VPH (FP7), Tuning
  - National and international: Medbiquitous, G4 project, REViP

- A long-term approach can be applied, to assess clinical outcomes of medical educational innovations. Students subject to baseline assessments, follow up of academic, clinical performance.

- Unified approach can be applied, relating ICT innovation to educational, clinical and social outcomes
Support

Existing networks to build on for support:

- **MedBiquitous Europe** (healthcare standards), linked to pan-European projects in health.
- **AMEE, MedEdWorld** and other medical educator networks.
- **Virtual Physiological Human, NOE**.

Existing and related projects:

- EC health projects: **eViP, mEducator, Tuning, INMEDEA**

Further support exists at many different levels: National departments of health and universities; in subject specific, technical, and administrative areas, as well as in humanities depts.