



Integrated multi-disciplinary in-situ simulation

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In-situ simulation is a highly effective tool for developing technical and non-technical skills in medicine [1]. It is able to foster closer collaboration and effective teamwork [2,3], identify system errors [4], aid reflective practice [5] and stress inoculation in a safe environments [6]. This is how we do it in the Manchester Royal Infirmary Critical Care Unit.

What you will need:

- 1 available bedspace
- 1 manikin
- 1 SIM monitor
- 1 dedicated resus trolley
- Full set of supplies (our own)
- 1-3 doctors (various seniority)
- 3-5 nurses (various seniority)
- 2 or more facilitators
- Several scenarios
- Feedback forms
- 1 separate space for debrief
- Bonus: allied health professionals.

1. Write scenarios beforehand. Use a template (e.g. NWSEN)
2. Ensure nurses and consultants in-charge know that inSIM is happening
3. Prepare the bedspace, manikin and SIM monitor. Leave at least 1 hour for preparation.
4. Allow 15-30min for simulation and at least 30min for debriefing.
5. Choose participants, or pull the emergency buzzer (ensure a mix of skill and seniority as in real life)
6. Pre-SIM brief: Include ground rules, what to expect, objectives, what is possible with manikin and assurance of confidentiality.
7. Begin with a nurse assigned to patient, bring in other personnel through escalation of care.
8. Facilitate. Do not trick or hinder. Make it realistic.
9. At the end of the simulation, take the participants to a separate space for debrief (to remove from emotional stress).
10. Focus on technical, non-technical skills and systematic errors. Try to engage most if not all participants
11. Link to teaching programme and additional online resources for further reading (on certificate)
12. Feedback forms and certificate of completion help audit progress and provide a sense of achievement.

Setting up a dedicated inSIM team helps to gain credibility, maintain standards, increase efficiency and quality of simulations. Here is how we did it.

Key ingredients [7]:

- ≥ 1 interested senior/consultant
- ≥ 1 motivated trainee
- ≥ 2 interested nurses
- Evidence of success

1. Create a safe environment, facilitate discussions.
2. inSIM is effective for emphasising teamwork and communication. Use this to promote a cohesive unit.
3. Aim for allocated “education/simulation” time for trainee/nurses. Helps unlock creativity and improve collaboration/integration. This also allows staff to pursue their interests and improves morale.
4. Get training on inSIM (e.g. NWSEN, FOAMed), especially on giving effective feedback.
5. Separate but identical SIM equipment/drugs avoids clashing with patient care yet allow systematic errors to be picked up.
6. Present evidence from own/other units. Senior management can then grasp importance of simulation.
7. Keep the patients safe. Sometimes, the show must not go on.

Current and Future strategies for integration and improvement

- Scenarios linked to regular teaching sessions to strengthen knowledge, apply multi-modal learning and repetition.
- Further multi-modal learning with St Emlyn’s moodle, teaching videos etc. Extension of e-resources for nurses and AHPs
- Learn from other departments and expertise (e.g. A&E)[7], other regional hospitals
- Interdepartmental inSIM with patient’s journey from A&E to ICU/Theatre
- Quality improvement we have implemented
 - Streamlining difficult airway trolley documents
 - Improved availability of emergency algorithms
 - More to come in the future...

Chapter 11: Worked Examples



Baseline @ MRI ICU

40 bed ICU/HDU
32 nurses, 4 consultants, >7 trainees (typical shift)
Doctors of different backgrounds
Tertiary inner-city teaching hospital
Rapidly expanding, many staff on rotation

Regional centre for:

- Haematology
- Kidney and pancreas transplants
- Major trauma
- Complex abdominal surgery

Baseline teaching @ MRI

Doctors:

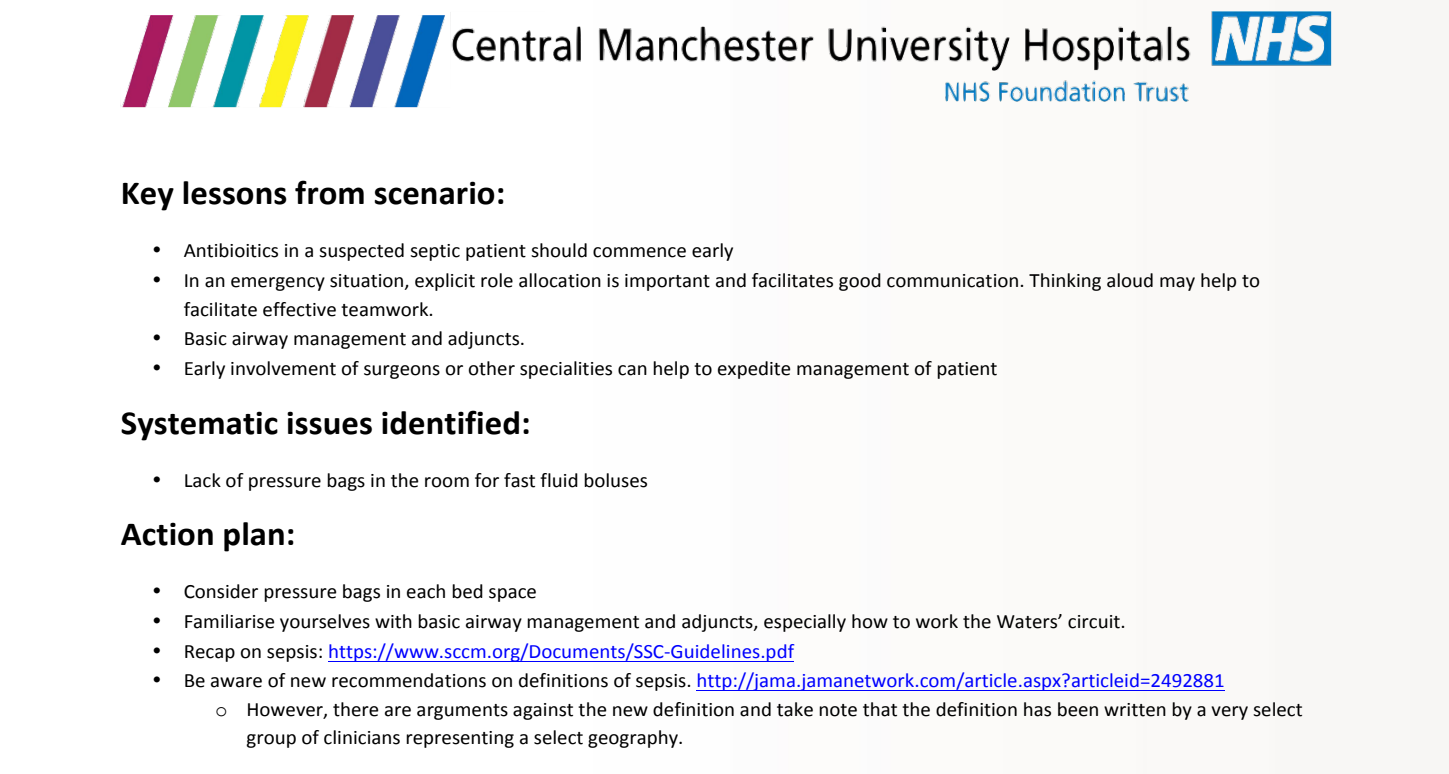
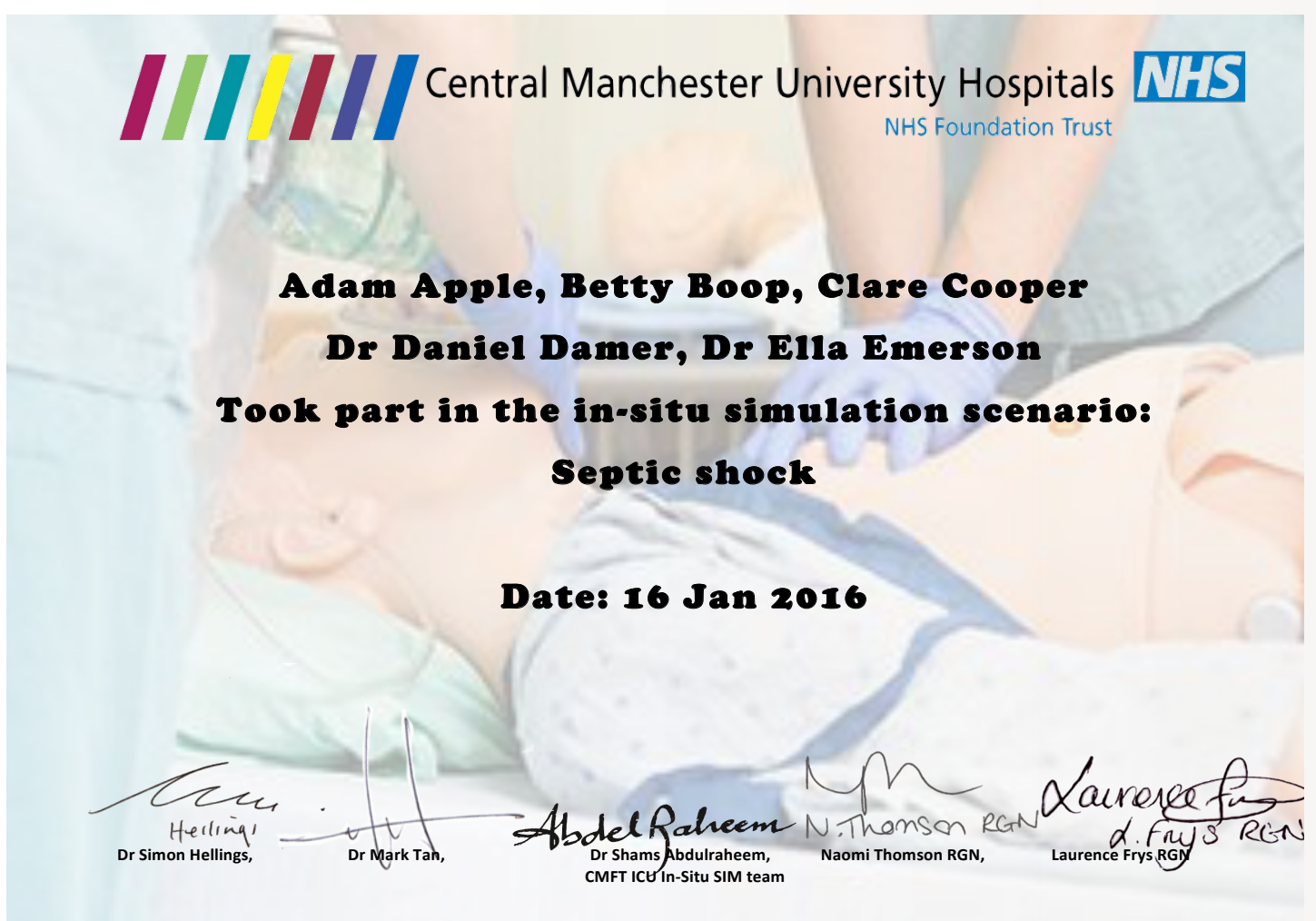
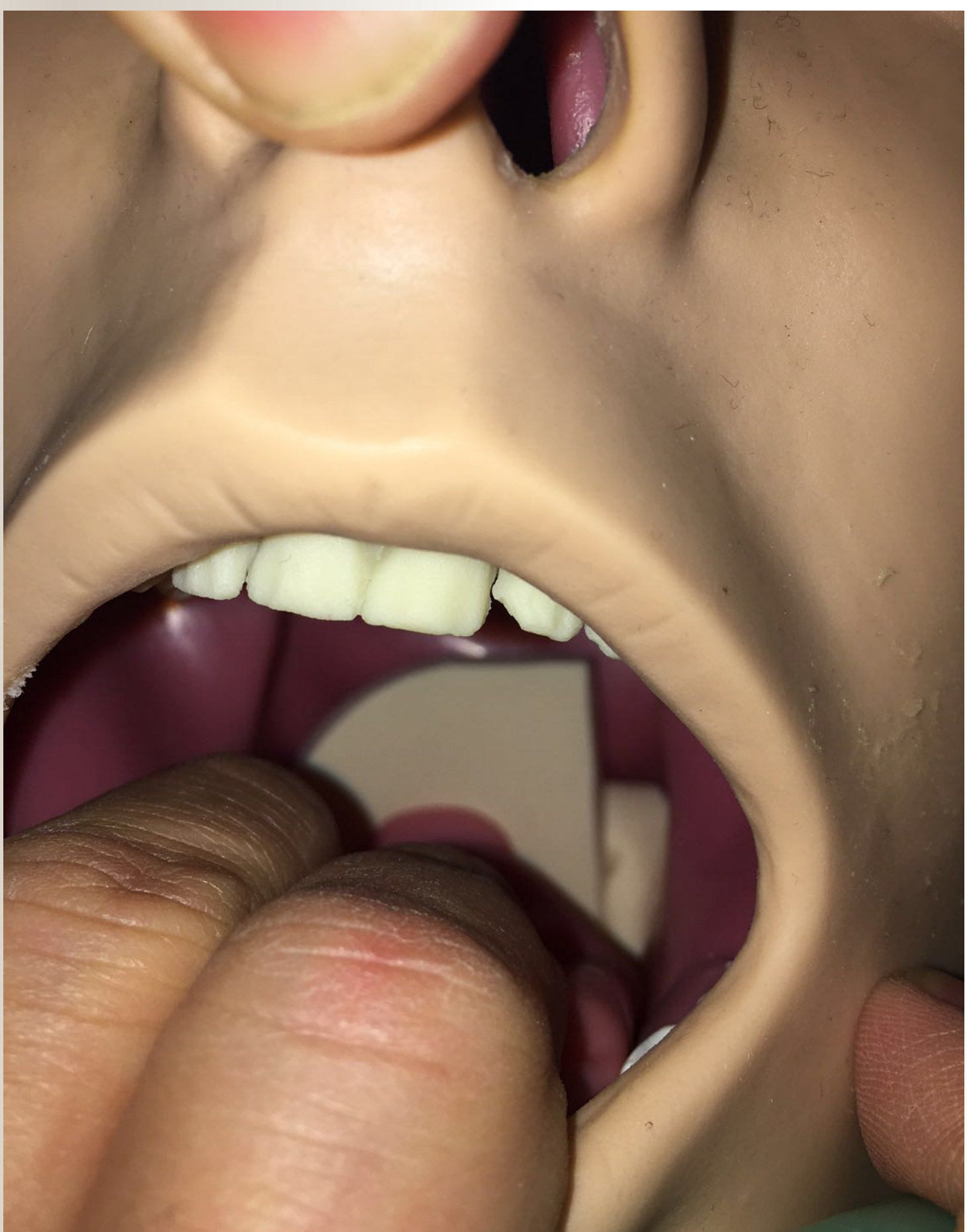
- Foundation 2 to Advanced trainees (various specialties)
- Weekly teaching with Journal Club (3 hours)

Nurses:

- External Critical Care course
- Daily lunchtime teaching

Regional and other departments:

- St Emlyn’s e-portal
- A&E and obstetrics inSIM programme



Left to right beginning at top left: Cardiac arrest scenario; Separate crash trolley stocked with own equipment; Foreign body simulating can’t intubate can’t ventilate scenario; Sample certificate and key lessons; Fake blood for massive haemorrhage scenario

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2. Boet S, Bould MD, Layat Burn C, Reeves S. Twelve tips for a successful interprofessional team-based high-fidelity simulation education session. *Med Teach*. 2014;36(10):853-857.

3. Couto TB, Kerrey BT, Taylor RG, FitzGerald M, Geis GL. Teamwork skills in actual, in situ, and in-center pediatric emergencies: performance levels across settings and perceptions of comparative educational impact. *Simul Healthc*. 2015;10(2):76-84.

4. Yajamanyam PK, Sohi D. In situ simulation as a quality improvement initiative. *Arch Dis Child Educ Pract Ed*. 2015;100(3):162-163.

5. Kolb DA. *Experiential learning: experience as the source of learning and development*. Englewood Cliffs; London: Prentice-Hall; 1984.

6. Meichenbaum D. *Stress inoculation training*. New York; Oxford: Pergamon Press; 1985.

7. Spurr J, Gatward J, Joshi N, Carley SD. Top 10 (+1) tips to get started with in situ simulation in emergency and critical care departments. *Emerg Med J*. 2016.