History of Simulation Manikins and Technology

1. In Antiquity, when models of human patients were built in **clay and stone** to demonstrate clinical features of diseases and their effects on humans. Such simulators were present across different cultures and even enabled male physicians to diagnose women in societies where social laws of modesty were used to forbid exposure of body parts.

3. Dr. Giovanni Antonio Galli (1708-1782) developed a birthing simulator for training his students and midwives in Bologna, Italy. Obstetric simulators, called **obstetrical phantoms**, were available in the early 20th century.

1929

5. While the unsystematic use of inanimate and live simulators has been reported along the history of medicine, the origins of medical simulation as we know it nowadays come from another science: aviation. In 1929, Edwin Albert Link invented the first flight simulator, a **"Blue Box"** prototype. The simulator was a fuselage-like device equipped with a cockpit and controls. The ability to reproduce flying motions and sensations allowed Link to teaching his brother to pass during the same year.

Mid-1960s

9. **Sim One** Start of true computer-based manikin mid-1960s.
It was built in collaboration with Sierra engineering and Aerojet general corporation. The simulator was remarkably lifelike mannikin controlled by a hybrid digital and analog computer. Sim One didn't achieve acceptance. Only one was constructed. It got approval from society for technology in Anesthesia. These pioneers were too far ahead of technology and the demand of its application at the time.

1968

11. **Harvey Cardiology Manikin**- half manikin 1968 was named after Dr. Harvey, who used audiovisual in his teaching. This manikin displays various physical findings. He can simulate a spectrum of cardiac disease by varying blood pressure, breathing pulse, regular heart rates and mummers.

12. **Simulator K** was a more miniature simulator that Harvey inspired.

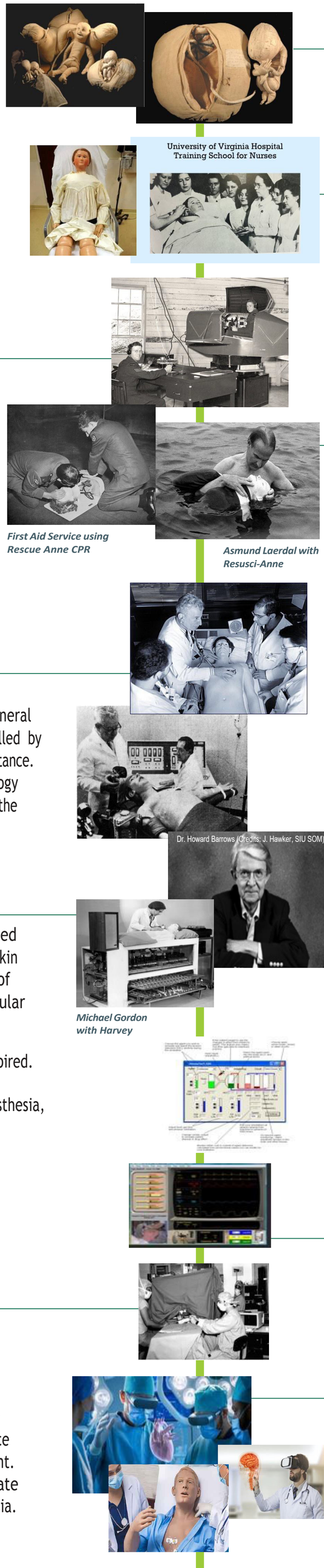
13. **Gas Man** computer-based simulation of various aspects of anesthesia, teaching the uptake and distribution of anesthetic agents.

14. **SLEEPER**, a screen-based simulator intended to teach physiology and pharmacology.

15. **Body** which has evolved from SLEEPER.

1980

17. As technology improved during the 1980s and 1990s, software and computerized systems that mimic physiologic responses and provide honest feedback were produced. At Stanford University, a group led by David Gaba developed the **comprehensive anesthesia simulation environment (CASE)**. The rationale of the CASE simulator was to incorporate the aviation crew resource management model for teamwork training in a realistic environment. CASE 1.2 (comprehensive anesthesia simulation environment) Late 1980'S inspired by efforts to improve patient safety under anesthesia. **CASE 2.0 contained a cardiovascular model**.



First Aid Service using Rescue Anne CPR

Asmund Laerdal with Resusci-Anne

Michael Gordon with Harvey

1700

2. In 18th century France, Angélique Marguerite Le Boursier du Coudray (1712-1794) used a **cloth** birthing simulator to teach her techniques to midwives and surgeons.

1911

4. Created in 1911, the lifesize **Mrs. Chase doll** is the first known doll explicitly designed for training health care workers. The original was built in Rhode Island for Hartford Hospital.

Early-1960s

6. In the early 1960s, Peter Safar described the efficacy of mouth-to-mouth cardiopulmonary resuscitation. Encouraged by his work, Ausmund Laerdal, a plastic toy manufacturer, designed a realistic simulator to teach mouth-to-mouth ventilation. He named the mannequin **Resusci-Anne**, inspired by a famous European history of a young girl that was found dead floating on the River Seine.

7. Later, Laerdal was advised by Safar to include an internal spring attached to the mannequin's chest wall, which permitted the cardiac compression simulation. This was the birth of the most widely used **CPR mannequin** of the 20th century.

8. SIM man manufactured by **Medical Plastic Cooperation** which was Bought by Laerdal later. Cheaper manikins are more anatomically correct.

1964

10. Modern simulation is not only based on lifelike mannequins. Howard Barrows first reported using actors to portray patient encounters in 1964. Barrows started systematically using healthy actors to simulate patients' signs and symptoms and teach and assess their students. The **standardized patient was born**, an umbrella term for situations where a person is trained to simulate a clinical case or an actual patient is instructed to present their illness in a standardized way.

The debut of SP character Patty Dugger (Rose McWilliams) marks the origin of programmed patients, which came to be called standardized patients later. Patty Dugger was a paraplegic woman with multiple sclerosis; her experience was based on an actual patient at the Los Angeles County Hospital. The SP, Ms. McWilliams, was coached to have paraplegia, bilateral Babinski's, dissociated sensory loss, and a blind eye. She learned to present with the anxiety and concern of the actual patient she was modelled after. Dr. Barrows also developed a **checklist** for the SP to record what happened with each student during every encounter - a process still in use today.

16. **Anesthesia Simulator** consultant, anesthesia simulator recorder, this system provided learning objectives, management advice and automated debriefing.

2007- 2023

18. Recently, even more realistic environments were introduced through the development of virtual reality simulation. In 2007, medical schools created forums in an internet-based world called **"Second Life."** Then Gaumard came out with **HAL S5301, the** first AI Manikin. This virtual life tool provided an environment where students could practice history-taking and clinical examination skills.

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