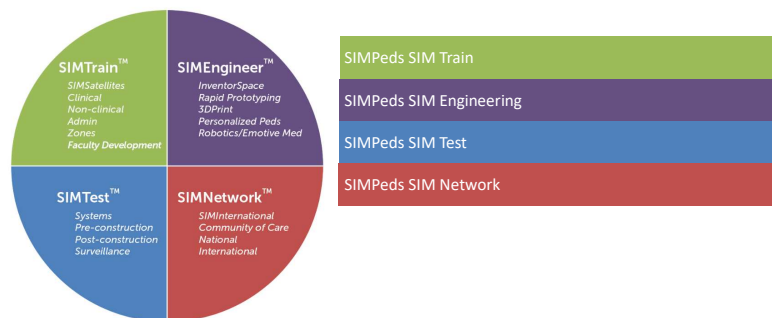




## Boston Children's Hospital Simulator Program

- Since 2001, Boston Children's Hospital Simulator Program (**SIMPeds**) has focused on **perfecting an inextricable link between preparedness and high quality, high volume pediatric care**, as a quality improvement resource, preparation and testing system.
- **SIMPeds** emphasizes **"location, location, location"** as a main ingredient of its secret sauce in engaging the whole host of trainees through our most senior clinicians (>70% of usage), weaving SIM through the very fabric of a busy hospital among 27 departments and divisions.



## SIMPeds SIM Train

- SIMPeds SIM Train division encompasses >100 multidisciplinary courses geared to training across the expertise gradient at BCH, Nationally and Internationally.
- Courses include pure skills, contextualized medicine, mock codes, team work and human factors all tailored to levels of students through the most senior staff among 27 medical and surgical units and departments.
- The SIM Train Division also includes multiple component courses and activities in SIM Faculty Development from basic techniques in SIM delivery, to state of art "how to" courses in Human Factors training each with heavy emphasis on debriefing and feedback as core to the method.
- SIMPeds has partnered with 12 hospitals in 7 countries focused on rapid upstart of state of art International Pediatric Simulation Centers for hospital and global regions.



## SIMPeds SIM Engineering

- SIMPeds SIM Engineering division ‘personalizes pediatrics’ by seamlessly integrating high fidelity simulator and device manufacturing into the SIMPeds curriculum development pathway for training, surgical planning and care delivery.
- Through a combination of materials, industrial and mechanical engineering, SIM Engineering focuses on development of whole body mannequins and skills trainers applied to neonatal through adolescent models.
- Now through SIMPeds3D, SIM Engineering is moving the needle as “personalized pediatrics” via creation of exact recreations of child anatomy for ultrahigh fidelity SIM, surgical planning and preparation as well as patient and family education. SIM Engineering also partners with divisions throughout the hospital in creating prototypes of devices to enhance pediatrics.



## SIMPeds SIM Test

- SIMPeds SIM Test Division focuses and enhances safety through engagement of SIM Technology as “crash test dummies” for the full range of hospital activities, policies, procedures environments and facilities.
- SIM Test assists in safe iteration, vetting and identification of best approaches and remediation of latent safety threats prior to any ill effects or harm to children.
- STEP 1: Pre-adoption/construction
- SIMs to assess and test feasibility, logistics and best, safest, most economical approach to optimize form-function prior to adoption/construction.
- STEP 2: Post-adoption/construction
- SIMs to safely introduce new policies, facilities to BCH staff/teams by engaging in highly realistic simulations prior arrival/movement of actual patients.
- STEP 3: Ongoing Surveillance
- Ongoing interval SIM testing and evaluation throughout the life of a facilities, policy, elements to insure ongoing safe use.



## SIMPeds SIM Network

- SIMPeds SIM Network division reaches beyond walls to connect Boston Children’s to its families as well as local and regional pediatric healthcare community.
- Goals of SIM Network are to produce novel mechanisms to cascade BCH “know how” throughout the community as well as to develop sustainable simulation activities to occur on-site to support partnering institutions.
- Partners include the BCH Network Hospitals, Pre-hospital/EMS, Massachusetts Fire and Police Departments. SIM Network innovatively reaches our families and caregivers by providing pre-discharge SIM education to mitigate anxiety through education and prepare and facilitate easy and safe transitions.



## Our Team

- Our **SIMPeds Team** comes from leading industries including healthcare, biotech, engineering, education, and customer service and share an intense focus on quality and service.
- **5 major areas:**
- -Operations
- -Education and Research
- -Technical Simulation Delivery
- -Engineering.

SIM Anesthesia
SIM Cardiovascular
SIM Critical Care Medicine
SIM Emergency Medicine
SIM Medicine
SIM Neonatology
SIM Network
SIM Nursing
SIM Orthopedics
SIM Otolaryngology
SIM Surgery
SIM Surgical Specialties



## SIM International.

SIM International.



## Some highlights of our SIM International Center Work:

- All projects are **comprehensive and goal and success oriented**
- Founded on active collaboration between international collaborating institution (ICI) and BCHSP (SIMPeds) through a **mixture of on-site (2-3 weeks/yr) and offsite E-communication**
- Projects duration **typically 2-3 years to complete**, with specific **6 month deliverables** and accompanying reports of progress.
- Goal is to build **SIMTrain** + one other division (SIMTest or SIMNetwork) within the project time frame.
- Core Activities include **Faculty Development (TTT Workshops delivered directly to ICI, dedicated specifically to pediatric/perinatal medicine** with focus on simulation state of art and debriefing across curricular types).
- ICI visits are **well coordinated** with activities devoted to meetings, course work, infrastructure review, technology and expanding market and buy in for you home institution.
- Specific Course Needs Assessments, Design, Implementation and Launch **based on BCH established materials then adapted to culture and language**
- **Overarching goal is to produce a Pediatric Simulation Center of Excellence in ICI home country, and the Region as a Benchmark.**
- **All work and materials are delivered in native language** through Simultaneous Translation from expert interpreter team.



## International Center Development

- **JOIN THE SIM International Community** – Rapid upstart of high quality, sustainable, and successful Simulator Programs world-wide.
- SIMPeds is built on the framework of a “professional organization within a professional organization” and for the past 7 years it has assisted in the building of >12 programs in 7 countries around the globe. The work is achieved through the adaptation of rigorous policies and procedures guiding every step – from faculty development, to curricula and scenario design. The focus on the launch of successful courses and building blocks of strong programs.
- Collaborative projects are sized to overall scope and take the form of anywhere between 1 and 5 year projects – designed in 6 month deliverables.



## SIMPeds 3D Print

- 1. What is SIMPeds3D?
- SIMPeds rapid 3D print and prototyping service is BCH's in-house rapid 3D printing and prototyping service for surgical pre-planning, pediatric device discovery, production and research. State of the art printers, machines, radiologic and technical expertise. All under one roof — right here.



- 2. What can be printed?
- Nearly anything. Any anatomy that can be visibly distinguished on CT/MR can be 3D printed as well as mechanical devices and products. With the additional of special effects expertise, “feel” and materials can often also be crafted to reflect the real thing.



- 3. I want to print a pre-surgical model, what type of imaging do I need?
- Optimal imaging is critical to process. See SIMPeds3D guide on imaging modality and slice thickness.



- 4. How long does it take to get a print?
- To ensure delivery 1 week prior to surgery, plan to submit your request form approximately 4 weeks ahead. Please contact us directly regarding emergency cases at [Andrew.hosmer@childrens.harvard.edu](mailto:Andrew.hosmer@childrens.harvard.edu)



- 5. How do I get started?
- Simply log-in to <http://dotnetvcmsprd/SIMPeds> using your BCH username/password and select “SIMPeds3D Print Request” under Request Forms tab.





### Range of SIMTest Applications

SIMTest Target	Description
Procedures	Test policies and procedures using medical simulation scenarios to rehearse rare but important clinical situations
Placement of equipment in an existing room	Use of simulation scenarios to run and re-run scenarios to determine optimal placement of new equipment in existing spaces
Pre-construction Design	Use of cardboard to determine optimal room size, furniture/equipment placement, new lines of sight and bathroom access
Post-construction Readiness	Readiness testing of new construction before the first patient crosses the threshold
Surveillance	Stress testing existing spaces to surface latent safety threats



## SIM-UB: Unit Based Simulator Suite



SIM-ICU: ICU Based Simulation Suite



SIM-OR: Operating Room Procedural Skills Center



SIM-Mobile: Mobile Simulation Units



Inventor Lab



# Inventor Lab



- **A.** Importing a patient's images into a 3D design program for printing; checking the print job; taking the model, embedded in a removable support material, out of the printer; examining the cleaned and finished product.
- **B.** Neurosurgeon **Joseph Madsen, MD**, with a model brain printed from images of one of his patients. Notice the different plastics for different brain structures.
- **C.** Interventional radiologist **Darren Orbach, MD, PhD**, holds a model from a patient with a rare vascular anomaly called a vein of Galen.
- **D.** Plastic surgeon-in-chief **John Meara, MD, DMD**, measures features of a model of a patient's skull.

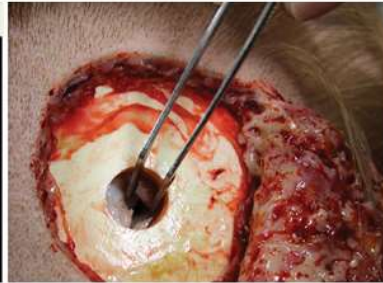


## ECMO:



Trainer unveiled at the Pediatric Innovation Summit!

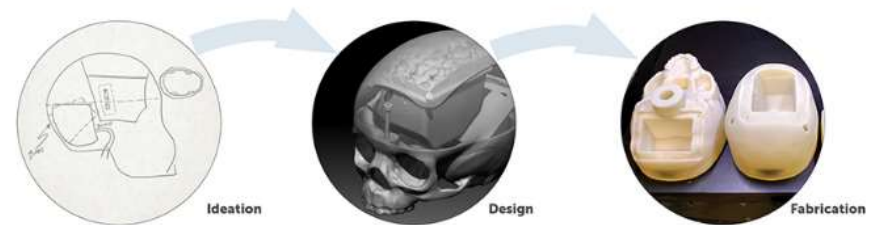
### High-fidelity patient-specific ETV trainer:



### Surgical Sam:



### Neuro CRICO Head: Ultrasound Head:







## Visits & Observerships

- Candidate Requirements:
  - Post-graduate multidisciplinary staff with interest/experience in simulation-based education applied to hospital setting including:
    - - Nursing
    - - Physicians (fellow through senior attending/consultant)
    - - Allied Health Care
- Background:
  - 1 day to 2-week observation experience where visitors are exposed to a variety of simulation courses including pure skills sessions, mock codes, nursing orientation courses and full-scale native team training courses. Visitors have opportunities to meet with simulation leaders in several departments/divisions as well as SIMPeds Staff. Visitor's time will be tailored to their individual goals and interests. As our international partnerships grow, our visitors come from all over the world looking to bring Simulation to their hospitals.



## Workshop

- [Workshop 1: Conceptualizing Simulation Research](#)
- **Location:** Fenway Conference Room, 342 Longwood Ave  
**February 25th, 2017:** 8am-12pm  
**February 27th, 2017:** 1pm-5pm
- [Workshop 2: Methods used in simulation research](#)
- **Location:** Fenway Conference Room, 342 Longwood Ave  
**April 7th, 2017:** 8am-12pm  
**April 9th, 2017:** 1pm-5pm
- [Workshop 3: Outcomes, evaluations and assessments](#)
- **Location:** Fenway Conference Room, 342 Longwood Ave  
**June 3rd, 2017:** 8am-12pm  
**June 5th, 2017:** 1pm-5pm

### [Workshop 4: Data collection and analyses](#)

**Location:** Fenway Conference Room, 342 Longwood Ave  
**September 9th, 2016:** 8am-12pm  
**September 11th, 2016:** 1pm-5pm

### [Workshop 5: Dissemination](#)

**Location:** Fenway Conference Room, 342 Longwood Ave  
**October 28th, 2016:** 8am-12pm  
**October 30th, 2016:** 1pm-5pm

### [Workshop 6: Funding](#)

**Location:** Fenway Conference Room, 342 Longwood Ave  
**December 9th, 2016:** 8am-12pm  
**December 11th, 2016:** 1pm-5pm

## Visits & Observerships

- Goals and Objectives:
  - - To gain first-hand knowledge of the workings of an on-site, hospital-based Simulator Program
  - - To learn details of successful execution of high-quality in-situ simulation experiences
  - - To better understand the spectrum of simulation curricula delivered at Boston Children's Hospital
- Request Process:
  - Please send all visitation requests to Lauren Barrett, SIMPeds Program Coordinator at [Lauren.Barrett@childrens.harvard.edu](mailto:Lauren.Barrett@childrens.harvard.edu). Be sure to include dates of your requested visit, background information and goals you have for your experience.



Boston Children's Hospital Simulator Program-Observership	
1	Regulation of 3D Printing medical device
2	3D Printing core work and meeting
3	3D Printing image system and computer aid design system
4	Clinical trial of 3D Printing medical device
5	Visiting of the 3D Printing company

# Welcome to SIMPed

