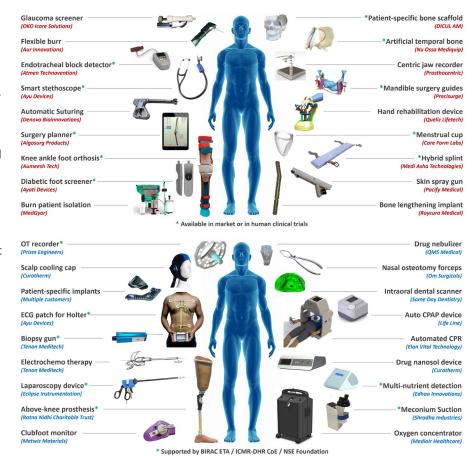BETIC– Biomedical Engineering & Technology Innovation Centre was established in 2014 at IIT Bombay to bring doctors, researchers, entrepreneurs and investors together for medical device innovation. The initiative was primarily supported by RG S&T Commission, Mumbai and later by NSTEDB, BIRAC, ICMR and NSE Foundation. Two satellite centers were set up at COE Pune and VNIT Nagpur, followed by self-supported BETIC cells in four engineering colleges (KJSCE Mumbai, MIT-ADT Pune, GHRCE Nagpur and SIU Pune) and seven medical institutes (GMC & JJH Mumbai, MGMIHS Sanpada, HITRT Mumbai, BJMC Pune, DMIMS Wardha and BKLWRH Dervan), making it the largest such network in the country.

The core team comprises about 30 faculty and project managers. More than 140 full-time fellows and research students worked at the centers. Many incubated their start-ups or joined the healthcare industry. About 120 doctors and 50 industry experts are associated as mentors or facilitators.

The BETIC team gathered 500+ unmet clinical needs from local hospitals, developed 250 different proof-of-concepts, and filed 58 patents. Of these, 18 products were licensed to the start-ups incubated by the researchers and 20 licensed to or developed for industry partners. Nearly 14,000 of these devices sold so far have benefited thousands of patients. The start-up companies created ~100 high-value jobs.

Glaucoma screener (OKO Icare Solutions)
Flexible burr (Aur Innovations)
Endotracheal block detector* (Atmen Technovention)
Smart stethoscope* (Ayu Devices)
Automatic Suturing (Denovo Bioinnovations)
Surgery planner* (Algosurg Products)
Knee ankle foot orthosis* (Aumeesh Tech)
Diabetic foot screener* (Ayati Devices)
Burn patient isolation (MedGyor)

*Patient-specific bone scaffold (DICUL AM)
*Artificial temporal bone (Nu Ossa Mediquip)
Centric jaw recorder (Prosthocentric)
*Mandible surgery guides (Precisurge)
Hand rehabilitation device (Queliz Lifetech)
*Menstrual cup (Care Form Labs)
*Hybrid splint (Medi Asha Technologies)
Skin spray gun (Pacify Medical)
Bone lengthening implant (Raycura Medical)

* Available in market or in human clinical trials

OT recorder* (Prism Engineers)
Scalp cooling cap (Curotherm)
Patient-specific implants (Multiple customers)
ECG patch for Holter* (Ayu Devices)
Biopsy gun* (Tenon Meditech)
Electrochemo therapy (Tenon Meditech)
Laparoscopy device* (Eclipse Instrumentation)
Above-knee prosthesis* (Ratna Nidhi Charitable Trust)
Clubfoot monitor (Metwiz Materials)

Drug nebulizer (QMS Medical)
Nasal osteotomy forceps (Om Surgicals)
Intraoral dental scanner (Same Day Dentistry)
Auto CPAP device (Life Line)
Automated CPR (Elan Vital Technology)
Drug nanosol device (Curotherm)
*Multi-nutrient detection (Edhaa Innovations)
*Meconium Suction (Shradha Industries)
Oxygen concentrator (Mediair Healthcare)

* Supported by BIRAC ETA / ICMR-DHR CoE / NSE Foundation

THE ESSENCE OF
Medical Device
Innovation

B Ravi

Among BETIC start-up companies, 17 won the prestigious BIRAC Biotechnology Ignition Grant. Team members also won 60 other awards including Gandhian Young Technological Award, DST India Innovation Growth Programme Medal (3), Google Impact Challenge Award, Emerging Startup of Year, American Bazaar Start-Up Competition, Young Entrepreneur, Indo-Swiss AIT, SICOT Research, SKB Seva Samaj, Maharashtra Startup Week, AI Innovation Challenge, NCPEDP-Mphasis Universal Design, IET IOT Challenge-Healthcare, Infosys Aarohan Social Innovation Award, DST Cawach, Millenium Alliance, NIDHI-Prayas, MeitY TIDE, BIRAC Fast Track and BIPP. The innovators were featured in both national and regional newspapers as well as business magazines like Forbes India. Their products were displayed in more than 40 events.

Over 500 engineering and medical students were introduced to med-tech innovation in 18 Medical Device Hackathons (MEDHA) organized at different institutes in Mumbai, Pune, Nagpur, Wardha and Kolhapur. Further, 450 professionals were trained in 7 Medical Device Innovation Camps (MEDIC). These helped in curating clinical needs, identifying potential innovators and entrepreneurs, and seeding the culture in new institutes, bringing them into the BETIC network.

The book 'Essence of Medical Device Innovation' (Crossword, Mumbai, 2017) captures the process evolved at BETIC, which also received ISO 13485 certification and featured in Harvard Business Case Catalogue. Project faculty and researchers shared their experience through 75 publications and 190 invited talks in various institutes.

BETIC process, pipeline, products and people are contributing to med-tech innovation ecosystem in the region and country, leading to affordable healthcare and high-value entrepreneurship. Recent complementary projects supported by government agencies and industry partners are sustaining and scaling up the activities. Please visit us or get in touch to know more!

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