

Brian D. Gross, BSEE, M.Sc., RRT, SMIEEE

Summary 	With over 35 years of experience, Brian Gross is a leader with a proven record of bringing medical devices to market. As Founder and CEO of his LLC, he is focusing on SaaS/Subscription of licensed knowhow he originated while with Philips, services, and consulting. Domains include business and innovation leadership, strategy, intellectual property, standards, medical device regulatory pathways, and information systems. During his stint with Philips, he last served as the business leader for the <i>Genomics for Infectious Disease</i> Group and was responsible to scale the startup business. As a Fellow Scientist and Clinical Systems Architect, he was responsible to lead teams of multinational clinical, engineering and research resources on multiple organic and co-creation innovations. Many of these innovations have led to adjacent products, solutions, and new businesses for Philips. In his prior roles he was directed business funded research and advanced development focused on patient monitoring, AI based disease detection and prediction, time critical decision applications, advanced clinical decision support applications, and application interoperability. He was also responsible for clinical research and validation activities for the global Patient Monitoring businesses. Brian has extensive experience designing, developing, and conducting clinical research, and advanced product development, including large animal surgery and instrumentation. Brian is a senior member of AAMI Medical Alarm Standards Committee where he led the delivery of TIR documents and consensus-based alarm standards. He is a recognized technical and clinical expert on IEC/ISO TC62D committee. He served as an investigator on several very competitive publicly funded projects including the NIH-NIBIB funded Bioengineering Research Partnership with Massachusetts Institute of Technology and Beth Israel Hospital (MIMIC). More recently, he was an investigator responsible for the technical development and roll out of a Class 2 cloud based CDS medical device for ICU (Process AWARE) as part of the CMS Innovation Grant with Mayo Clinic and the NIH's US Critical Illness and Injury Trials Group. He was also a key contributor in several Department of Defense funded research projects focused at acquisition of clinical datasets to be used in AI/ML algorithm development (RATE) activities, as well as regulatory and commercialization activities needed to deliver the work products for DoD acquisition. Brian received his BSEE and MSc in Biomedical Engineering from Worcester Polytechnic Institute, in Worcester Massachusetts. He is a licensed Respiratory Care Practitioner in the Commonwealth of Massachusetts and was formally a Paramedic and Paramedic Skills Evaluator in New York. He is a senior member of the IEEE, a member of the American Association of Respiratory Care, and the Society of Critical Care Medicine.
Experience	2022 - pres. Founder and CEO– Genomics for Infectious Disease (G4ID), LLC, North Andover, MA G4ID is focusing on SaaS/Subscription of licensed products from Philips, services, and consulting. Domains include business and innovation leadership, strategy, intellectual property, medical device standards, medical device regulatory pathways, and information systems.

	2019–2022 (Retired) Business Leader – Genomics for Infectious Disease, Philips, Cambridge MA - Created and advanced new business through Bell-Masson Alpha phase. Focused on de-risking new-to-world minimally viable proposition (MVP) involving next generation sequencing, bioinformatics and clinical informatics, creation of new SaaS/Subscription business models in traditionally capital Order-to-Cash business system, manage evidence / proof creation, launch vitality, and delivering committed EBIT. 2014 – 2022 (Retired) Fellow Scientist / Clinical Systems Architect- Patient Care and Monitoring Solutions, Clinical Science, and Innovation. Philips, Andover / Cambridge MA - Drove innovation across the cluster including creating internal and external funding and clinical partner opportunities. Created and drove integrated global teams, target landing business's QMS, and SAFE-agile methodologies to ensure rapid co-creation of MVP, design / execute meaningful outcome studies through clinical partners. Expanded clinical KOL, and key customer relationships. 2006 - 2014 Principal Scientist / Clinical Systems Architect- Patient Care and Monitoring Solutions, CTO- Research and Advanced Development. Philips, Andover MA - Synthesized and drove strategy though system specification including risk management, usability strategy and design goals. Managed innovation funnel through internal external clinical research assets to support long range business goals. Evaluated M&A opportunities for clinical, technical and business fit. Drove consistency, simplicity and value to the Philips businesses and solutions while demonstrating progress toward Clinical Decision Support innovation funnel and prioritization. Lead external standards activities, clinical KOL, and key customer relationships. 2001 – 2006 Senior Manager of Clinical Research. Ultrasound and Monitoring, Research and Development, Philips, Andover MA - Reorganized validation efforts from a product / box perspective, to a system and solution approach. Originated and owned execution of new process to drive down effort, cost and complexity of prerelease testing. Enhances services to include creation of regulatory and basic science clinical data. 1993 – 2001 Field Trial/Clinical Validation Manager, Patient Monitoring Division, Research and Development. Agilent Technologies - Hewlett Packard Medical Systems, Andover MA - Developed ISO 9001 / globally complaint process for conducting prerelease testing of regulated medical devices. Service multiple businesses and product teams through planning and execution of the process. Demonstrated reduction in post release defect density and increase NPS while ensuring global regulatory compliance. 1991– 1993 Scientist, Product Development Engineering: VivaScan Corporation, Southboro, MA - Start-up contract research company, prototyping Near Infrared Acousto-Optic Tunable Filter (solid state optical filter) system for non-invasive
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	medical applications. Designed and build discrete instrumentation and delivered animal and human testing results. 1989– 1991 Research Fellow, Sponsored Research, Worcester Polytechnic Institute, Worcester, MA • Small medical device manufacturer funded treatment modality for splanchnic ischemia. Developed novel artificial lung, instrumentation system and optimized system though POC animal testing. 1985– pres. Respiratory Care Practitioner, University of Mass. Medical Center, Worcester, MA, St. Joseph’s Hospital and Health Center, Syracuse, NY • Devised treatment plan based on diagnostic evaluation and monitoring of critical care neonatal, pediatric, and adult patients. Initiate life sustaining modalities and care for chronic home care patients. 1983– 1988 Paramedic/Skills Evaluator, Syracuse University Ambulance, Carrier Dome Medical, Baldwinsville Ambulance, WAVES Ambulance, Syracuse, New York • Coordinated, scheduled, and supervise deployment of other paramedics while providing emergency medical care and team coverage for 50,000 spectators. Delivered emergency care in the streets to sick and injured
Awards	2019 Visionary Award, Cambridge Chamber of Commerce- Philips for their development of the Precision Infection Prevention software: IntelliSpace Epidemiology Information System. 2016 Outstanding Innovation Award, Philips (global companywide award) - Genomics for Infectious Disease 2016 Third Prize Poster Presentation, “Information Reign From The Cloud- A Time Critical Cloud-Based Decision Support System Operating On De-Identified Data” IEEE/EMBS-BHI and HIMSS Conference, Las Vegas 2015 Outstanding Innovation Award, Philips (global, companywide award) - Monitoring as a Service- A Rapid Co-creation 2014 Outstanding Innovation Award, Philips (global, companywide award) - Project AWARE with Mayo Clinic 2011 Best Research Paper of 2011 Awarded by Biomedical Instrumentation & Technology Editorial Board for Physiologic Monitoring Alarm Load on Medical/Surgical Floors of a Community Hospital 2002 Employee of the Month (October) Philips Medical Products Group 1990 First Prize Biomedical Research Competition - Worcester Polytechnic Institute, “Design and Evaluation of a Fiber Optic Fluorescent Sensor System”

	1987	Student Scholarship Award, New York Society of Respiratory Care , Syracuse NY
	1986	Honorary Life Membership, Syracuse University Ambulance , Syracuse NY
Education	1991	M.Sc. Biomedical Engineering , Worcester Polytechnic Institute, Worcester, MA. Master's Thesis: <i>The Design and In-vivo Evaluation of an Intestinal Intraluminal Membrane Oxygenation system (Artificial Lung)</i> .
	1990	BSEE Electrical Engineering and Biomedical Engineering (With Distinction), Worcester Polytechnic Institute, Worcester, MA. Senior Thesis: <i>A non-invasive Fluorescent Fiber Optic PCO₂ Sensor for pH Monitoring</i> .
	1986	AAS Respiratory Care (With Honors), State University of New York, Syracuse, NY, NBRC registered, and Mass Licensed Respiratory Care Practitioner (RT-1918).
	1985	Certified Paramedic Upstate Medical Center, Syracuse, NY, (EMT-P 63993)
	1982-1986	Industrial Design and Engineering (attended) Syracuse University, Syracuse, NY
Professional Interests and Appointments	2014 – pres.	Appointed by ISO to IEC - TC 62/SC 62D/JWG 22, Medical Devices and Alarm Systems - Technical and Clinical Expert
	2012	Affiliate Researcher, Massachusetts Institute of Technology, Cambridge, MA.– Informatics CSAIL
	2011– pres.	Society of Critical Care Medicine – General Member
	2011	AMA/IEEE Conference Session Chair- Clinical Decision Support and Individualized Medicine- Boston.
	2009 - 2013	IEEE EMBS Industry Relations - Committee Member
	2008 - 2022	AAMI/HE Human Factors Engineering Committee - Member Liaison
	2007 - 2022	AAMI/AL Medical Device Alarms Committee- Member
	1989	Advisor and founding member of Worcester Polytechnic Institute Emergency Medical Service, Worcester, MA
	1988 – pres.	Institute of Electrical and Electronics Engineers - Senior Member
	1986 – pres.	National Board Respiratory Care - Registered member

	1985 – pres. American Association of Respiratory Care - Active Member 1999 – 2001 American Heart Association, Merrimack Valley MA Chapter - Board of Directors
Community Service	2011 – 2017 Elected Official - School Committee- North Andover, MA 2004 – 2012 Board of Directors – North Andover Music Association - North Andover, MA 2004 – 2016 Instructor – Kenpo Karate (second degree Black Belt) - North Andover, MA 1988 – 1990 Paramedic (Worcester Polytechnic Institute EMS– Worcester, MA 1983 – 1988 CPR/ First Aid Instructor – Syracuse, NY 1983 – 1988 Paramedic (Greater Baldwinsville Ambulance Corps, West Area Volunteer Ambulance, Syracuse University Ambulance) – Syracuse, NY
Publications (selected)	Genomics for Infectious Disease KR Hansen, RT. Ellison, DV. Ward, DJ. Holler, JL. Ashworth, MM. Fortunato-Habib, JJ. Carmona, BD. Gross. “Accuracy of Infection Control Surveillance in Identifying Genomically Confirmed Cross-transmission Clusters”. <i>The 6th Decennial International Conference on Healthcare Associated Infections</i>, Decennial 2020, co-sponsored by the Infectious Diseases Society of America (IDSA) and Centers for Disease Control and Prevention (CDC), Washington, DC; 26 – 30 March 2020; Abstract 563, Poster No. 930 Accepted Dec 2019 DS. Chen, M Quinn, RM. Sussner, T Rowland, G Rinck, S Labrecque, L Mack, B Clones , G Wang, M Chanza, W Huang, C Scurlock, CD. Becker, AJ. Doty, JL. Ashworth, MM. Fortunato-Habib, B E. Wong, KR. Hansen, A Abdolahi, JJ. Carmona, BD. Gross. “Precision Infection Prevention (PIP) as a New Standard of Practice Within Longitudinal Infection Prevention and Surveillance”. <i>The 6th Decennial International Conference on Healthcare Associated Infections</i>, Decennial 2020, co-sponsored by the Infectious Diseases Society of America (IDSA) and Centers for Disease Control and Prevention (CDC), Washington, DC; 26 – 30 March 2020; Abstract 556, Poster No. 929 Accepted Dec 2019 DS. Chen, RM. Sussner, M Quinn, G Wang, M Chanza, W Huang, C Scurlock, CD. Becker, JT. Fallon, KR. Hansen, JL. Ashworth, MM. Fortunato-Habib, JJ. Carmona, BD. Gross. “Minimizing pseudo-cluster suggestions in infection control surveillance using pathogen DNA sequencing and artificial intelligence”. European Society of Clinical Microbiology and Infectious Diseases, ECCMID 2020, Paris, FR, Apr. 18-21, 2020—Abstract Accepted January 2020 Chen, D., Xu, L., Fortunato-Habib, M., Hoss, A., Chanza, M., Yin, C., Kolde, R., Dhand, A., Sussner, R., Carmona, J.J., Wang, G., Huang, W., Gross, B.D., Fallon, J. (2018). Genomic sequencing and clinical data integration for next-generation Infection Prevention. <i>Infectious Disease (ID) Week 2018</i>, Abstract #72682 (Accepted); 3-7 October 2018; San Francisco, CA

	van Aggelen, H.C., Kolde, R., Chamarthi, H., Fan, Y., Fallon, J.T., Huang, W., Wang, G., Fortunato-Habib, M.M., Carmona, J.J., and Gross, B.D. "A core genome approach that enables prospective and dynamic monitoring of infectious outbreaks. <i>Sci. Rep.</i> 9, 7808 (2019). Ward, D.V., Hoss, A.G., Kolde, R., van Aggelen, H.C., Loving, J., Smith, S.A., Mack, D.A., Kathirvel, R., Halperin, J.A., Buell, D.J., Wong, B.E., Ashworth, J.L., Fortunato-Habib, M.M., Barton, B.A., Lazar, P., Carmona, J.J., Mathew, J., Salgo, I.S., Gross, B.D., and Ellison, III, R.T. " Integration of genomic and clinical data augments surveillance of healthcare-acquired infections. <i>Infect. Control Hosp. Epidemiol.</i> 40, 649–655 (2019). H van Aggelen, R Kolde, H Chamarthi, J Loving, JT. Fallon, W Huang, G Wang, MM. Fortunato-Habib, JJ. Carmona, and BD. Gross. "An alignment-based approach to detect bacterial cross-transmissions prospectively in dynamic environments". <i>ASM Microbe 2019</i>, San Francisco, CA, June 20-24 2019; Late-Breaker Abstract submitted on March 14, 2019 R Kolde, J Loving, R Sharma, JJ Carmona, AJ Doty, BD Gross, , HC van Aggelen, "Automated, Rapid Detection of Potential Healthcare-Acquired Infection Clusters Based on Microbiology And Patient Geotemporal Data". October 2019, <i>Open Forum Infectious Diseases</i> 6(Supplement_2):S844-S844,DOI: 10.1093/ofid/ofz360.2119 BE Wong, JJ Carmona, MM Fortunato-habib, HC van Aggelen, AJ Doty, BD Gross, "A data-driven model of the economic burden of healthcare-associated infections as impacted by use of comprehensive genomic analysis of bacteria", October 2019, <i>Open Forum Infectious Diseases</i> 6(Supplement_2):S847-S847 DOI:10.1093/ofid/ofz360.2128 DS Chen, M Quinn, RM Sussner, G Wang, JT Fallon, M Chanza, AJ Doty, JL Ashworth, SW Kelleher, DJ Holler, MM Fortunato-habib, J Loving, A Abdolahi, JJ Carmona, BD Gross, "Practical and Evidence-Based Considerations for Implementation of Bacterial Whole-Genome Sequencing Within Longitudinal Infection Control Practice", October 2019 <i>Open Forum Infectious Diseases</i> 6(Supplement_2):S255-S255 DOI: 10.1093/ofid/ofz360.600 Clinical Informatics H Truebel, E Schwager, K Jansson, A Rahman, S Schiffer, Y Chang, G Boverman, B Gross, M Xu-Wilson, P Boehme, and J Frassica, "Utilizing machine learning to improve clinical trial design for Acute Respiratory Distress Syndrome", <i>npj Digital Medicine</i> (2021) 4:133 ; https://doi.org/10.1038/s41746-021-00505-5, Received: 22 November 2020; Accepted: 9 August 2021; Published online 09 Sept 2021 Conroy, B., Silva, I., Mehraei, G. et al. Real-time infection prediction with wearable physiological monitoring and AI to aid military workforce readiness during COVID-19. <i>Sci Rep</i> 12, 3797 (2022). https://doi.org/10.1038/s41598-022-07764-6
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	Gross BD, Kathirvel,R. Eldo, I, “Information Reign From The Cloud- A Time Critical Cloud-Based Decision Support System Operating On De-Identified Data”, IEEE/EMBS-BHI and HIMSS Conference, Las Vegas, March 2016 Gross BD, “Big Data Analytics”, AAMI, Philadelphia, May 2014 Gross BD, “Real-time Cloud Based Clinical Decision Support Innovation”, CHIME CMIO January 2013, February 2014 Gross BD, “Alarm System Management”, Philips HIT Talk, HIMSS, Orlando March 2014 Gross BD, “Massive Clinical Databases and Machine Learning for Predictive Clinical Alerts- Is There a Signal in the Sea of Noise?” 4th International Conference on Computational Surgery, Harvard Medical School, Dec 2012 Gross BD, Dahl D, Nielsen L, “Physiologic Monitoring Alarm Load on Med/Surg Floors of a Community Hospital”, AAMI Horizons – Special Issue, June 2011 Cao H., Li B., Gross BD, Kauffmann R., May A, “Delayed intravenous insulin therapy initiation is associated with mortality in the ICU”, Abstract 2491, SCCM 40th Critical Care Congress, San Diego, Jan 2011 Cao H., Eshelman L, Nielsen L, Gross BD, Saeed M, Frassica JJ, “Hemodynamic Instability Prediction Using Continuous Multi-parameter Monitoring in the ICU”, Journal of Healthcare Engineering, (Vol. 1, No. 4, 2010) October 2010 Cao H, Lee KP, Ennett C, Eshelman LJ, Nielsen L, Saeed M Gross BD, “Heuristics to Determine Ventilation Times of ICU Patients From the MIMIC-II Database”, Paper 1104 at 32nd Annual International IEEE EMBS Conference of the IEEE Engineering in Medicine and Biology Society to be held in Buenos Aires August 2010 Cao H, Eshelman L, Chbat N, Nielsen L, Gross B, Saeed M., Predicting ICU Hemodynamic Instability Using Continuous Multiparameter Trends, Accepted for presentation at 30th Annual International Conference of the IEEE Engineering in Medicine and Biology Society to be held in Vancouver, British Columbia, Canada, August, 2008 Ennett C, Lee KP, Eshelman LJ, Gross BG, Nielsen L, Frassica JJ, Saeed M, Predicting Respiratory Instability in the ICU, Annual International Conference of the IEEE Engineering in Medicine and Biology Society to be held in Vancouver, British Columbia, Canada, August, 2008 Biomedical Device Wei Zong, Larry Nielsen, Brian Gross, Juan Brea and Joseph Frassica, “A practical algorithm to reduce false critical ECG alarms using arterial blood pressure and/or photoplethysmogram waveforms”. July 2016 Physiological Measurement 37(8):1355-1369
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	Gross,BD, Presenter at the International Institute for Research, QSR Aspects to the Regulated Device Studies”, Boston 2001 Gross,BD, Presenter at the International Institute for Research, “Applied Regulations of Clinical Device Research”, San Diego 2000 Gross,BD, Sacristán E,. Peura RA, Shahnarian A, Devereaux, D, Wang HL, Fiddian-Green R, Supplemental Systemic Oxygen Support Using an Intestinal Intraluminal Membrane Oxygenator Artificial Organs 24 (11), 864–869. 2000 Gross BD, Sacristán E,. Peura RA, Shahnarian ,Supplemental systemic oxygen support using an intraluminal membrane oxygenator, Proceedings of the 1st Latin American Biomedical Engineering, IEEE Conference Mazatlan, 1999 Gross BD, The Design and In-vivo Evaluation of an Intestinal Intraluminal Membrane Oxygenation system (Artificial Lung)., Masters of Science Thesis, Worcester Polytechnic Institute, 1991 Gross BD, A non-invasive Fluorescent Fiber Optic PCO2 Sensor for Phi Monitoring, Proceedings from The 13th National Conference of Undergraduate Research, Union Collage, 1990 Gross BD. Speaker at International Institute for Research, 2001, Boston, “Clinical Device Studies and World Compliance” Gross BD. Speaker at International Institute for Research, 2000 San Diego “Regulation of Clinical Device Studies” Gross BD. Speaker at Pennsylvania State Society of Anesthesiology and Anesthesia Technologists” 1997, Philadelphia, “Regulations, Product Safety Considerations, and Testing Affecting Anesthesia Monitoring”
Intellectual Property – Granted (selected)	• US Patent 10,264,968 Body worn sensors network with redundant parameter prioritization and temporal alignment • US Patent 10,004,823 Method and system to detect that a device has been cleaned • EP2449490B1 Patient monitoring with automatic resizing of display sectors • US Patent 9,788,793 Method and system to identify motion artifacts and improve reliability of measurements and alarms in photoplethysmographic measurements • US Patent 9,715,577 Patient identification disambiguation systems and methods • US Patent 9,582,988 Method and system to reduce the nuisance alarm load in the clinical setting

	• US Patent 9,577,934 Optimizing physiologic monitoring based on available but variable signal quality • US Patent 9,554,740 Apparatus for measuring and predicting patients' respiratory stability • US Patent 9,433,348 Method of rendering hemodynamic instability index indicator information • EP2656261B1 System and method for providing medical caregiver and equipment management for patient care • US Patent 8,878,677 System and method for automatic capture and archive of clinically meaningful vitals • US Patent 9,053,583 System and method for providing intelligent parameter substitutions for clinical applications • US Patent 9,577,934 Optimizing physiologic monitoring based on available but variable signal quality • US Patent 9,544,151 Controlling access to clinical data analyzed by remote computing resources • US Patent 9,356,888 System and method for distributing meaningful clinical alerts • US Patent 9,352,109 Method for semantic communication of device data between a source and receiving client • US Patent 8,744,876 Method and system for providing a patient identification beacon for patient worn sensors • US Patent 9,582,988 Method and system to reduce the nuisance alarm load in the clinical setting • US Patent 9,445,764 Method for automatic setting time varying parameter alert and alarm limits • US Patent 9,356,888 System and method for distributing meaningful clinical alerts • US Patent 9,189,941 Stepped alarm method for patient monitors • US Patent 9,104,789 Patient monitoring with automatic resizing of display sectors • US Patent 8,878,691 Method for providing visualization of a data age • US Patent 8,613,702 Device, apparatus and method for obtaining physiological signals by way of a feeding tube
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	• US Patent 5,277,181 Noninvasive measurement of hematocrit and hemoglobin content by differential optical analysis • US Patent 5,372,135 Blood constituent determination based on differential spectral analysis
Intellectual Property – Published (selected)	• US20110140912A1 Method for providing visualization of a data age • US20170169691A1 Detecting a movement and/or a position of an object to be monitored • WO2019063520A1 System and method for joint clinical decision for pharmaceuticals • WO2019020497A1 Contextualized patient-specific presentation of prediction score information • WO2015071847A2 Clinical decision support system based triage decision making • EP3616215A1 Use of clinical knowledge to improve use of next generation sequencing • WO2018197374A1 Compression and annotation of digital waveforms from serial read next generation sequencing to support remote computing base calling • WO2019115415A1 Methodology for measuring the quality of phylogenetic and transmission trees and for merging trees • US20200043569A1 System and method for real-time prioritization of sequencing • EP2929476A1 A method and system to reduce the nuisance alarm load in the clinical setting • EP2931120A1 A system and method to detect significant arrhythmic events through a photoplethysmogram (ppg) and accelerometer • WO2012017354A2 Method for semantic communication of device data between a source and receiving client • US20180314793A1 Methods, systems and processes of determining transmission path of infectious agents • WO2014091385A1 Method and system for making multisite performance measure anonymous and for controlling actions and re-identification of anonymous data • WO2014087296A1 A system and method for optimizing the frequency of data collection and thresholds for deterioration detection algorithm

	• EP3491802A1 System and method for optimizing a user experience based on patient context, user roles, current workflow, and display proximity • US20150236859A1 Controlling access to clinical data analyzed by remote computing resources • WO2014020490A9 Federated patient guaranteed unique identification (guid) matching • WO2015159177A1 Controlling actions performed on de-identified patient data of a cloud based clinical decision support system (cdss) • WO2015055469A1 A unique methodology combining user roles and context aware algorithms for presenting clinical information, audio, video and communication controls to safely capture caregiver attention, reduce information overload, and optimize workflow and decision support • US20150006088A1 Method and system to predict physiologic and clinical status changes • EP2850550A1 Method of rendering hemodynamic instability index indicator information • WO2012085762A2 System and method for providing intelligent parameter substitutions for clinical applications • EP2249700A1 Apparatus for measuring and predicting patients' respiratory stability • US20140043164A1 Stepped alarm method for patient monitors • US20120116194A1 Method for automatic setting time varying parameter alert and alarm limits • WO2012017342A1 Method for display and navigation to clinical events • WO2010095064A1 System and method for automatic capture and archive of clinically meaningful vitals
Research Support	2 R01 EB/001659-06 Roger Mark, MD, PhD (PI) 30-Sep-03 to 31-Jul-2013 Role: Co-Investigator Institution: MASSACHUSETTS INSTITUTE OF TECHNOLOGY 77 MASSACHUSETTS AVE CAMBRIDGE, MA 02139 Department: HEALTH SCIENCES TECHNOLOGY ICD: NATIONAL INSTITUTE OF BIOMEDICAL IMAGING AND BIOENGINEERING IRG: BCHI Abstract: DESCRIPTION: The objective of this Bioengineering Research Partnership, established in October 2003, is to develop and evaluate advanced ICU patient monitoring and decision support systems that will improve the efficiency, accuracy, and timeliness of clinical decision-making in critical care. The partnership combines

	the resources of a powerful interdisciplinary team from academia (MIT), industry (Philips Medical Systems and Philips Research North America), and clinical medicine (Beth Israel Deaconess Medical Center). During the initial funding period of this BRP substantial progress has been achieved, including the development of a massive new research database from more than 30,000 ICU patients (the Multiparameter Intelligent Monitoring in Intensive Care (MIMIC) II database) and a number of promising advanced monitoring concepts and algorithms. Our initial work has substantiated the hypothesis that sophisticated analysis of the rich multi-parameter data gathered from ICU patients can illuminate their changing pathophysiologic state, and can even provide alerts of impending changes in state. The major goals for the second phase of this BRP are to develop and demonstrate the effectiveness of advanced monitoring concepts and algorithms in laboratory studies utilizing the resources of MIMIC II, and then to carry successful concepts forward into clinical tests in the ICUs of Beth Israel Deaconess Medical Center (BIDMC) and elsewhere with the collaboration of our clinical and industrial partners. We also will enhance the value and availability of the MIMIC II database by adding new adult and neonatal data, designing and improving sophisticated data mining and signal processing tools, and freely distributing to the research community the database and its associated exploration tools via PhysioNet (www.physionet.org). PUBLIC HEALTH RELEVANCE The objective of this Bioengineering Research Partnership, established in October 2003, is to develop and evaluate advanced ICU patient monitoring and decision support systems that will improve the efficiency, accuracy, and timeliness of clinical decision-making in critical care.
Research Support	Ognjen Gajic, M.D (PI) 1- July-2012 to 30-June-2015 Role: Co-Investigator Institution: MAYO CLINIC 200 FIRST STREET SW ROCHESTER, MN 55905 Department: CENTERS FOR MEDICARE AND MEDICAID Award Agency: Department of Health and Human Services CFDA No.: 93.610 Abstract: The goal of this project is to develop and test a novel acute care interface with built-in tools for error prevention, practice surveillance, decision support and reporting (ProCCESs AWARE - Patient Centered Cloud-based Electronic System: Ambient Warning and Response Evaluation). In preliminary studies, these novel informatics supports built on an advanced understanding of cognitive and organizational ergonomics, have significantly decreased the cognitive load of bedside providers and reduced medical errors. Using a cloud-based technology, AWARE will be uniformly available on either mobile or fixed computing devices and applied in a standardized manner in medical and surgical ICUs of five geographically diverse acute care hospitals predominantly serving Medicare and Medicaid patients. The impact of ProCCESs AWARE on processes of care and outcomes in study ICUs will be evaluated using a standardized step-wedge cluster randomized study design expected to enroll more than 10,000 critically ill patients during the three year study period. The proposed centralized cloud-based repository of critical data elements not only will allow multiple institutions to have access to real time point of care critical information necessary for effective medical decision making but also will enable: a) standardized decision support, b) electronic surveillance, c) error-prevention, d) comparative effectiveness research, and e) reporting of quality metrics, cost and outcomes of critically ill patients. The ongoing collaborations between a multicenter clinical research network, experts in acute care informatics from industry and

	academia as well as experts in cognitive psychology and human factors engineering represent an outstanding opportunity to implement a transformational technology
Research Support	July-2010 to 2022 Role: Scientific Steering Committee Institution: ASSOCIATION FOR THE ADVANCEMENT OF MEDICAL INSTRUMENTATION 4301 N. FAIRFAX DRIVE, SUITE 301 ARLINGTON, VA 22203 Department: AAMI FOUNDATION Abstract: This work is focuses on creating a public resource of clinical and device data suitable for academic, healthcare delivery organizations and industry, to advance delivery of safer clinical systems and more actionable information from medical devices. Activities include partnering with FDA, JACHO, ACCE, HTF, scores of industrial and delivery organizations, to document requirements, deliver core clinical knowledge, and specify technical solutions for creation of a collaborative public data resource.
Personal	59 years old. Married 33 years (in a row!), with 2 adult children. Active and enjoys blue ocean cruising, and martial arts. Enjoy the challenge of new projects, start-up environments, and handling several priorities at once.
References	Available upon request.