




Pharmacy Informatics Specialty Residency/Fellowship Programs

Residency Information	 University of Michigan	 OREGON HEALTH & SCIENCE UNIVERSITY	 UNIVERSITY OF UTAH HEALTH CARE	 Vanderbilt University Medical Center	 VA SAN DIEGO HEALTHCARE SYSTEM <small>A Division of VA Desert Pacific Healthcare Network</small>	 University of Louisville HealthCare
Location	Ann Arbor, Michigan	Portland, Oregon	Salt Lake City, Utah	Nashville, Tennessee	San Diego, California	Louisville, Kentucky
Length of program	1 year (PGY2 only)	1 year (PGY2 only)	1 year (PGY2 only)	1 year (PGY2 only)	1 year (PGY2 only)	1 year (PGY2 only)
Informatics education	Prepare pharmacists to be leaders in informatics. Education will include technology concepts, project management, clinical informatics including exposure to CPOE and clinical decision support, budgeting, project management, vendor relations, integration of systems and innovation in technology. Research, writing and teaching experiences are additionally provided.	Information/project management, student/resident teaching, research, clinical decision support, data warehousing, internet-based applications, user training, drug information/drug policy, CPOE/EMR, evidence based medicine, vendor relations, pharmacy automation, health information technology	Healthcare informatics with an emphasis on clinical applications, CPOE/EMAR implementation, pharmacy automation, bar code technology, smart pumps, and project management.	Information/Project Management, project lifecycle, technology infrastructure, integration/interface, clinical information systems, clinical decision support, implementation, CPOE, EMR, BCMA, pharmacy automation, vendor relations	Information/project management, data warehousing, internet-based applications, CPOE/Electronic Medical Record/BCMA maintenance, pharmacy automation	Project Management, Database, CPOE, Bedside Bar-coding, Smart Pump Technology, Clinical Decision Support, EMAR, EHR, Wireless/Paperless Initiatives, Hardware/Software Systems Support, Teaching Opportunities, Leadership
Degree/certification opportunity	None	None	Masters of Science in Medical Informatics or Masters in Public Health - extends residency to 2 yrs. (Must apply for acceptance into graduate programs)	None	None	Certified Associate in Healthcare Information and Management Systems
ASHP Accreditation	ASHP accredited	ASHP accredited	ASHP accredited	ASHP accredited	ASHP accredited	ASHP accredited
Clinical responsibilities	One weekend kinetic coverage monthly and one major plus one minor holiday	At the discretion of the program director, program coordinator, and resident	Varies depending on clinical site, but similar to practice residents	Mixed clinical and technical rotations at the discretion of the resident and preceptors	At the discretion of resident and clinical preceptors	At the discretion of the resident, informatics coordinator and clinical preceptors
Required clinics	None	None	None	Tailored to the resident	Tailored to the resident	None
Informatics projects	Projects vary depending on availability: two publishable papers	One 1-year long project and multiple smaller projects. Initiatives involving bar-code medication administration, pharmacy automation and roles in the new OHSU health information technology/system initiatives depending on availability.	Varies based on availability. One major residency project required; presented at the Mountain States Residency Conference.	Multiple projects with at least one primary/longitudinal	Projects vary depending on availability	One primary longitudinal plus multiple projects based on facility priorities and resident interests.
Required rotations	Tailored to the resident's career goals	Informatics Principles and Fundamentals, Informatics Software, Informatics Automation, Informatics Administration	Tailored to the resident	Tailored to the resident	No rotations, longitudinal residency	Tailored to the resident
Staffing	Clinical staffing on required weekends only	Four 8 hour shifts per month	Four 8-hour shifts per month	Direct staffing or clinical call every 4 th weekend	Based upon prior VA staffing experience	None
On-call pager responsibility	None	Schedule varies	None	Required - Schedule varies	None	Required-Schedule varies
Residency directors and contact information	Joe Lassiter, PharmD, MS, BCPS, CPHIMS Residency Program Director Assistant IT Director for Medication-Use Systems Email: jlassit@med.umich.edu Phone: 734-232-9591 OR Chris Zimmerman, PharmD, BCPS Residency Program Director Clinical Pharmacist Specialist, Informatics Email: chriszim@med.umich.edu Phone: 734-763-7496 University of Michigan Hospitals and Health Centers Department of Pharmacy - UH UHB2D301 1500 E. Medical Center Drive Ann Arbor, MI 48109-5008 Website: http://www.pharm.med.umich.edu/public/residencies/informatics/index.htm	Neil Edillo, PharmD, BCPS, CPHIMS Residency Program Director Email: edillon@ohsu.edu OR Allie Woods, PharmD Residency Program Coordinator Informatics Pharmacist Email: woodsall@ohsu.edu Oregon Health & Science University Hospitals and Clinics Department of Pharmacy Services, Mail code CR 9-4 3181 SW Sam Jackson Park Road Portland, OR 97239 Phone: 503-494-8007 Website: http://www.ohsu.edu/xd/health/services/pharmacy/training/informatics-specialty/index.cfm	Craig Herzog, RPh, MBA Director, Pharmacy Informatics & Technology University of Utah Hospitals and Clinics Department of Pharmacy Services 50 North Medical Drive Salt Lake City, UT 84132 Phone: 801-585-2188 Email: craig.herzog@hsc.utah.edu Website: http://pharmacyservices.utah.edu/residency_programs/index.html	Phillip W. Stewart, DPh, Informatics Pharmacist, Residency Program Director 3401 West End Avenue, Suite 630 Nashville, TN 37203 Phone: 615-936-2930 Email: Phillip.Stewart@vanderbilt.edu Website: http://www.mc.vanderbilt.edu/root/vumc.php?site=pharmacy&doc=6045	Daniel Boggie, PharmD Director, Pharmacy Data Applications Email: Daniel.Boggie@va.gov OR Jennifer Howard, PharmD Director, Pharmaceutical Integrated Technologies Email: Jennifer.Howard2@va.gov VA San Diego Healthcare System Pharmacy Service (119) 3350 La Jolla Village Dr. San Diego, CA 92161 Phone: 858-552-8585 x 3026 Fax: 858-552-7582 Website: http://www.pbm.va.gov/PharmacyResidencyProgram/California/VA%20San%20Diego%20PGY2%20Intern%20202012%202013.pdf	Amey C. Hugg, R.Ph., CPHIMS Manager, Pharmacy Informatics University of Louisville HealthCare 535 South Hancock Street Louisville, KY 40202 Phone: 502-562-3409 Email: ameyhu@ulh.org Website: http://www.uoflhealthcare.org/NursesPharmacistsandHealthProfessionals/PharmacyDepartment/PGY2InformaticsSpecialtyResidency/tabid/534/Default.aspx

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Residency Information		 Indiana University Health	 Marshfield Clinic Don't just live. Shine.	 SENTARA			
Location	Charlottesville, Virginia	Indianapolis, Indiana	Marshfield, Wisconsin	Norfolk, Virginia	Evanston, Illinois	Cleveland, Ohio	Baltimore, Maryland
Length of program	1 year (PGY2 only)	1 year	1 year	1 year	1 year (PGY2 only)	1 year	2 year (PGY1/PGY2)
Informatics education	Prepare pharmacists to be leaders in informatics. Education and rotations will include technology concepts, clinical informatics, project management, CPOE and exposure to financial issues and solutions, budgeting (when possible), vendor relations, system reviews and deployment, exposure to both inpatient and outpatient technology, and integration of systems and innovation in technology.	Healthcare informatics with an emphasis on clinical applications, implementations, pharmacy automation, project management and project lifecycle. CPOE, eMAR, barcode medication administration, clinical decision support and vendor relations will all be emphasized.	The purpose of the program is to prepare the resident to independently act as a leader and pioneer in pharmacy informatics with specialized expertise in: 1) clinical informatics, 2) technology and automation assessment, implementation, and work flow integration, and 3) patient safety within the medication use system business and vendor relationships.	Database design, maintenance, and reporting, CPOE/EMAR implementation, LAN/WAN technology, clinical decision support, interfaces, applications development, vendor relations, smart pump project, wireless technology initiative.	Prepare resident for a leadership role in medical informatics. The program is structured to offer a broad exposure to technology and informatics within the health system with an emphasis in clinical informatics. Residents will gain experience in systems evaluations, process re-design, project management, interdisciplinary teamwork, vendor relations, system testing and validations, change management, research, teaching and leadership.	Provide pharmacists both experiential and didactic informatics experiences to prepare for a career in medical informatics. Focus opportunities include: CPOE, Barcode Medication Administration, Pharmacy Automation (Automated Dispensing, Carousel, IV Robotics, Clean Room Workflow Solutions, Repackaging), Informatics Management/Leadership.	Pharmacy information governance, health system administration, leadership, issue and change management, pharmacy information systems, distribution technology, CPOE, Clinical Decision Support, clinical documentation, process/workflow re-design, information security, project management, system testing, user training, ongoing maintenance, and support.
Degree/certification Opportunity	None	None	None	None	None	None	Certificate Optional (Certificate in Clinical Informatics)
ASHP Accreditation	ASHP accredited	ASHP accredited	Candidate	Pre-Candidate	Candidate	Candidate	Candidate
Clinical responsibilities	At the discretion of the resident, Program Director, and clinical preceptor	Elective clinical rotations at the discretion of the resident and preceptors	At the discretion of resident and clinical preceptors	At the discretion of resident and clinical preceptors	As needed for projects and rotations	Some weekend clinical coverage (typically every 4 th weekend) and elective clinical rotations if requested by the resident	Mixed administrative, technical, and clinical rotations at the discretion of the resident and preceptors
Required clinics	None	None	None	Tailored to the resident	Tailored to the resident	Tailored to the resident	Yes, tailored to the resident
Informatics projects	Projects will vary depending on the needs of the department and availability	One major longitudinal project with project management methodology and presentation at Great Lakes Residency Conference required. Multiple smaller projects at the discretion of the resident and preceptor.	One major project and various small projects throughout the year	One major longitudinal project of publishable quality and multiple smaller projects throughout the year	One major longitudinal project and many smaller projects on rotation	One major project, with other smaller projects, and presentations at national meetings	One major project and active project lead on multiple smaller projects
Required Rotations	None, tailored to the resident	Tailored to the resident's career goals, but program is primarily longitudinal	Introduction to Pharmacy Informatics, Clinical Pharmacy Systems Management, Project life cycle 1, Patient Safety and Informatics, Clinical Decision Support, Medication Inventory Control 1, In Office Medication Administration and Order Entry 1. Many electives also exist. Longitudinal experiences include: leadership and practice management, research, committee involvement and service development	Project management, infrastructure, clinical documentation, clinical decision support, databases and applications, interfaces; additional longitudinal components for all rotations	Tailored to the resident	Informatics Theory, Decision Support, Orders Management, Automation/Technology, Longitudinal Project	Tailored to the resident: rotations include Internal medicine, Drug Information, Pharmaceutical Care, Practice Management, Critical Care, Longitudinal Ambulatory Care Clinic, Clinical Informatics, Project Management, Information Systems and Technology, Leadership and Strategic Planning, Operations Management, Medication Safety, Pharmaceutical Outcomes, and Pharmacoeconomics
Staffing	Acting supervisor one weekend per month	Kinetics coverage on weekend once every other month, two staffing shifts per month	At discretion of the resident and clinical preceptors	None	Clinical pharmacist patient care shifts 48 per year	Some weekend clinical coverage (typically every 4 th weekend)	Required – Every other weekend for first 12 months then every 3 rd weekend for last 12 months
On-call pager responsibility	None	Schedule varies	None	Schedule varies	None, however specific projects may include command center/on-call coverage	None	Required- 1 st year code coverage, drug information, and handling admin issues. 2 nd year PharmIS on-call
Residency directors and contact information	Mark P. Chabot RPh, MBA, MHA Pharmacy Informatics Manager UVA Health System 1215 Lee Street PO Box 800674 Charlottesville, VA 22908-0674 Phone: 434-465-5784 Fax: 434-244-7553 Email: mpc3y@virginia.edu Website: http://www.healthsystem.virginia.edu/pub/pharmacy/residency_info/pgy2informatics.html	Mark Baumgart, R.Ph., PharmD Analyst, Statewide Affiliates Residency Program Director, Pharmacy Informatics Indiana University Health South Campus 296 1515 N Senate Avenue Indianapolis, IN 46202 Phone: 317-962-9180 Email: mbaumgar@iuhealth.org Website: http://iuhealth.org/education/health-sciences/pharmacy/	Gary Plank, PharmD Corporate Director of Pharmacy Services Marshfield Clinic 1000 N Oak Avenue Marshfield, WI 54449 Phone: 715-221-9818 Email: nanstad.nancy@marshfieldclinic.org http://www3.marshfieldclinic.org/residents/?page=posteradpharmacinformatics	Raymond C. Chan, PharmD Residency Program Director Pharmacy IS Specialist Sentara HealthCare 800 Independence Boulevard, Suite 400 Virginia Beach, VA 23502 Phone: 757-252-0207 Email: rcchan@sentara.com Website: http://www.sentara.com/Employment/Pharmacy/Pages/pharmacy_informatics.aspx	Lynn Boecler, PharmD, MS Senior Director, Pharmacy Services and Pharmacy Informatics NorthShore University HealthSystem 2650 Ridge Avenue Evanston, IL 60201 Phone: 847-570-2206 Email: lboecler@northshore.org Website: http://www.northshore.org/academics/other-programs/pharmacy/	Jeff Chalmers, PharmD Assistant Director, Pharmacy Informatics Cleveland Clinic Health System 9500 Euclid Avenue Cleveland, Ohio 44195 Phone: 216-444-2233 Email: chalmei@ccf.org Website: http://my.clevelandclinic.org/pharmacy/education/pharmacvresidency.aspx	Brian Pinto, PharmD, MBA Assistant Director, Medication Policy & Clinical Informatics The Johns Hopkins Hospital 600 North Wolfe Street/Carnegie 180 Baltimore, MD 21287 Phone: 410-955-6348 Email: bpinto@jhmi.edu Website: http://www.hopkinsmedicine.org/pharmacy/

Residency information	 BRIGHAM AND WOMEN'S HOSPITAL	 NOVA SOUTHEASTERN UNIVERSITY	 CEDARS-SINAI MEDICAL CENTER.	 UCSF University of California San Francisco advancing health worldwide®	 nym New York Methodist Hospital	 THE OHIO STATE UNIVERSITY WEXNER MEDICAL CENTER	 COLLEGE of PHARMACY LIPSCOMB UNIVERSITY Lipscomb University
Location	Boston, Massachusetts	Fort Lauderdale, Florida	Los Angeles, California	San Francisco, California	Brooklyn, New York	Columbus, Ohio	Nashville, Tennessee
Length of program	2 year fellowship	2 year fellowship	2 year (PGY1)	1 year (PGY2 preferred)	1 year	1 year (PGY-2)	1 year (PGY-2 only)
Informatics education	Healthcare informatics, research techniques. Design, develop, test, implement, and interventions that affect medication use. Measuring change related to an intervention will give the fellow the ability to conduct independent research.	Prepare pharmacists to be independent researchers in consumer health informatics (CHI). CHI research will involve health information technologies (e.g., mHealth) used by patients to inform and assist with shared-decision making, manage health, and integrate in the healthcare system. Fellow's specific research interests will be used to tailor the program.	Advanced training in emerging technologies and health information systems with an emphasis on clinical applications and impact on patient care. Education will include automation technology, informatics research, project management, teaching and didactic training.	Prepare pharmacists to identify where technology and automation systems can work to improve the medication-use system. Includes the use of pharmacy automation, computerized provider order entry (CPOE), electronic medication administration records (EMAR), bar code technology at the point of care (BCPOC), clinical decision support (CDS) technologies, pharmacy information systems, and clinical documentation.	New York Methodist Hospital trains individuals in all aspects of the electronic medical record (EMR), computerized provider order entry (CPOE), clinical decision support, pharmacy automation, clinical automation, data protection, and other standards and best practices in the healthcare environment. Focused rotations include: technology concepts, project management, clinical informatics/database/rule design, budgeting, vendor relations, robotic interface, reporting, E-prescribing, and Internet applications. The pharmacy informatics residency prepares the resident to enter practice positions as a pharmacy informatics specialist in a private or government sector.	The focus of the informatics residency is to produce leaders who are attuned to the challenges of delivering health care and are able to direct the future of the profession through use of information systems. The resident will receive specialized training in health information technology with a focus on advanced clinical support. Experiences include project management; clinical decision support, CPOE, EMR, BCMA, automation implementation and optimization, and research. Teaching opportunities are optional.	The resident will develop advanced Informatics knowledge via education in medication safety, drug information, pharmacy automation, leadership development, software development life cycle, project life cycle, project management, CPOE, CDS, data management, data standards integration, and academia.
Degree/certification opportunity	Master of Science or Master of Public Health from Harvard School of Public Health	Master of Science in Biomedical Informatics Certificate in Public Health Informatics	None	Certified Professional in Electronic Health Records (CPEHR), Certified Professional in Health Information Technology (CPHIT), Epic Willow Certification.	None	None	Master of Science in Health Care Informatics or Certificate in Health Care Informatics (Must apply for acceptance into the graduate programs)
ASHP Accreditation	None	None	None	None	Candidate	None	Candidate
Clinical responsibilities	Occasional teaching responsibilities at Massachusetts College of Pharmacy & Health Sciences-Boston	Teaching opportunities in consumer health informatics courses	At the discretion of the resident and preceptors	At the discretion of the resident and preceptor	One clinical overview rotation	Variable, tailored to resident's interest and availability	Mixed clinical and technical rotations at the discretion of the resident and preceptors
Required clinics	None	None	Tailored to the resident	None	None	Tailored to the resident	Tailored to the resident
Informatics projects	Minimum one, flexibility based on fellow's skills and interest	Conception to implementation of one project; additional projects available	One major project, and multiple small projects throughout the residency	One primary/longitudinal project and active roles in many other projects	Must complete one required project and publication	Epic implementation and optimization projects. Tailored to skill set and professional goals of resident. Multiple small projects with combined longitudinal project(s)	One major longitudinal project and minor projects depending on the rotation
Required rotations	None	None	Tailored to the resident	No rotations, longitudinal residency	Tailored to the resident's career goals	Program is designed as longitudinal experience; Orientation and Operations are required experiences	Tailored to the resident
Staffing	None, focus is on education, informatics and outcomes research	No traditional staffing requirements	At the discretion of fellow and director	None	Staffing every other weekend	Clinical staffing required 20 weekends for the year	None
On-call pager responsibility	None	None	Schedule varies	Required- schedule varies	None	Schedule varies	Required-schedule varies
Residency directors and contact information	Mary Amato, PharmD, MPH, BCPS Associate Professor, Pharmacy Practice MCPHS University, Division of General Internal Medicine and Primary Care, Brigham and Women's Hospital 179 Longwood Ave Boston, MA 02115 Phone: 617-879-5043 Email: mary.amato@mcphs.edu Website: http://www.brighamandwomens.org/Departments_and_Services/medicine/services/primarycare/PDF/Pharmacy_Fellowship_2013.pdf	Kevin A. Clauson, PharmD Director, Center for Consumer Health Informatics Research (CCHIR) Associate Professor, Pharmacy Practice Adjunct Associate Professor, Biomedical Informatics Program Nova Southeastern University 3200 S. University Dr. Fort Lauderdale, FL 33328 Phone: 561-805-2241 E-mail: clauson@nova.edu Website: www.CCHIR.org	Vipul Patel, PharmD Manager - Pharmacy Informatics and Specialty Pharmacy areas Cedars-Sinai Medical Center 8700 Beverly Blvd Room A-903 Los Angeles, CA 90048 Phone: 310-423-5611 Fax: 310-423-0412 Email: Vipul.patel@cshs.org Website: http://www.cedars-sinai.edu/Patients/Programs-and-Services/Pharmacy-Services/Documents/Rx-Residency-Informatics-Technology-2011-2013.pdf	Bret Brodowy, PharmD Department of Pharmacy Phone: 415-476-8162 Email: bret.brodowy@ucsfmedctr.org OR Monica Aiello UCSF Residency Program Coordinator Phone: 415-476-2353 Email: aiellom@pharmacy.ucsf.edu University of California, San Francisco C-152, Box 0622 521 Parnassus Avenue San Francisco, CA 94143-0622 Website: http://clinicalpharmacy.ucsf.edu/residencies/	Eric M. Balmir, M.S., Pharm.D., CIM Chief of Pharmacy Residency Program Director, Pharmacy Informatics New York Methodist Hospital 506 Sixth Street Brooklyn, New York 11215 Phone: 718 780-5575 Email: erb9001@nyp.org Website: http://www.nym.org/	Beth Prier, PharmD, MS Associate Director, Pharmacy Informatics Department of Pharmacy Wexner Medical Center at The Ohio State University The Ohio State University Wexner Medical Center Department of Pharmacy 368 Doan Hall, 410 West Tenth Avenue Columbus, OH 43210-1250 Phone: (614) 293-1785 Email: Beth.Prier@osumc.edu Website: http://rx.osumc.edu/extranet2/index.html	Elizabeth Breeden, DPH, MS, CPEHR, CPHIT Assistant Professor Pharmacy Practice and Director of Graduate Studies in Health Care Informatics PGY2 Pharmacy Informatics Residency Program Director Office: 615.966.7112 Email: Beth.Breeden@lipscomb.edu OR David Mulherin, PharmD, BCPS Assistant Professor of Pharmacy Practice Office: 615.966.7197 Email: david.mulherin@lipscomb.edu lipscomb.edu/College_of_Pharmacy_and_Health_Sciences One University Park Drive Nashville, TN 37204 615.966.7160



Location Nashville, Tennessee

Length of program 1 year (PGY2 only)

Informatics education Improve patient outcomes through the application of pharmacy informatics principles, standards and best practices. This includes effective decision support for the interdisciplinary health care teams, as well as promoting the safe and effective utilization of technology and automation systems for pharmacy operations. The resident will be involved in the development, education, implementation and customer services for all members of the healthcare team using medication management services to ultimately improve patient outcomes.

Degree/certification opportunity Optional Teaching Certificate

ASHP Accreditation Pre-candidate

Clinical responsibilities As staffing and project responsibilities require

Required clinics None

Informatics projects One to two primary projects, other projects vary depending on availability

Required rotations Orientation, Fundamental Informatics, Medication Use Safety

Staffing Clinical coverage at an HCA hospital every third weekend

On-call pager responsibility None

Residency directors and contact information

Connie L. Saltsman, Pharm.D., MBA, CPHIMS, EHR Medication Management Expert Lead. Email: Connie.Saltsman@hcahealthcare.com
Phone: 615-344-2262

OR

Alicia B. Perry, Pharm.D. Manager Clinical Pharmacy and Therapeutics, Residency Director
Email: Alicia.Perry@HCAhealthcare.com
Phone: 615-344-2993
Hospital Corporation of America
Building 2-4E, One Park Plaza,
Nashville, TN 37203
Website:
<http://www.uthsc.edu/pharmacy/dcp/residencyfellowship/pgy2.php>