

# Doswell Health Informatics Conference

**Enhancing Clinician and Patient Well-Being  
Through Health Informatics**

**April 28, 2023**

**T. Boone Pickens Institute of Health Sciences Dallas Center**



**Presented by:**  
**The Texas Woman's University**  
**College of Nursing**  
**The Houston J. and Florence A.**  
**Doswell Foundation**



**COLLEGE OF NURSING**  
TEXAS WOMAN'S UNIVERSITY

# Doswell Health Informatics Conference History

The Texas Woman's University College of Nursing has been honored to host the biannual Doswell Health Informatics Conference since its inaugural conference in 2017. This esteemed event has been made possible by the generous donations from the Houston J. and Florence A. Doswell Foundation.

The Doswell Foundation was established in 2008 by Florence Annette Ward Doswell to support charitable, religious, scientific or educational causes in the United States. Florence developed a deep appreciation for the medical and nursing professions after her husband Houston's struggle with cancer, and she was inspired to provide philanthropic support to health-related institutions and their students. She has a special love for nurses and nursing students. In 2009, she donated \$3 million to the TWU College of Nursing. In recognition of her generosity, the College of Nursing at the Dallas center was named the Houston J. and Florence A. Doswell College of Nursing. In 2010, Florence donated an additional \$2 million to establish two endowed chairs in nursing for teaching excellence and health informatics. In the last years of her life, Florence spent many enjoyable days on the Dallas campus in the nursing college that bears her name. Even after her passing, Florence's legacy of generosity continued. In 2014, the foundation reaffirmed its continuing support for nursing education with another \$1 million gift to support the endowed chairs. Today, Florence's spirit of philanthropy and passionate support for nursing continues to inspire others.



aimed to be a premier event for collective action initiatives that incorporate cutting-edge informatics knowledge and skills to improve healthcare quality, health outcomes, and healthcare workforce across multiple domains, including clinics, communities, populations, vendors, education, and policies. The 2017 conference focused on using community collective action approaches with informatics technologies to engage consumers and patients in health care practices. In 2019, the Doswell Informatics Conference explored "Connected Communities: The Role of Health Informatics." The theme of the 2021 Online Doswell Nursing Informatics Conference was "Health Inequities - The Role of Interprofessional Health Informatics and Communities." This year, in 2023, the conference is centered on the theme "Enhancing Clinician and Patient Well-Being through Health Informatics"

The conference has been successful in bringing together stakeholders from diverse fields of health informatics, including clinicians, nurses, students, faculty, researchers, administrators, entrepreneurs, developers, and fostering meaningful dialogue and collaborative initiatives. The conference has been a source of inspiration for attendees, who have shown a great deal of enthusiasm and interest in the topics of the conference. Many have even pursued careers in health informatics as a result of attending. Overall, the conference strives to be an invaluable platform for stakeholders to exchange knowledge, skills, and innovative ideas aimed at enhancing healthcare outcomes through the use of health informatics.

The Doswell Health Informatics Conference has

# Health Informatics at TWU

## Graduate Certificate in Health Informatics

This program is intended for professionals who have a bachelor's degree or higher and seek additional education and training in health informatics. The graduate certificate is open to students from a variety of disciplines including, but not limited to, nursing, occupational therapy, physical therapy, nutrition science, health systems management and business.

Program Features:

- 100% online and interactive
- Interdisciplinary and collaborative
- 15 credits of coursework (5 courses) which can transfer to the MS in Informatics
- Faculty with expertise in health informatics education, research and practice
- Supervised practicums with outstanding academic and community partners
- Courses covering health data management, health information system management, telehealth, and healthcare data-related regulations aligned with the requirements of ANCC Informatics Nursing Certification (RN-BC) and HIMSS CAHIMS certification



## Master of Science in Informatics

The MS in Informatics consists of 36 semester credit hours of graduate coursework comprised of 15 credit hours of foundations in computer science, three credit hours in software/statistical tools, and 15 credit hours of discipline-specific coursework in one of the following application areas:

- Clinical applications
- Data science/data analytics
- Community informatics
- Sports informatics
- Cybersecurity



There is no application deadline. The MS in Informatics program has rolling admissions.

## BS in Health Informatics with Clinical Applications Minor

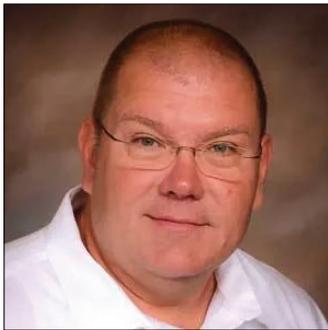
The BS in Health Informatics begins with a comprehensive computer science core combined with academic components from the clinical nursing program. This online interdisciplinary, interprofessional program thoroughly prepares students for diverse careers available. The program teaches key components of clinical informatics such as telehealth, data applications, human-computer interaction, and electronic health records.

# Greetings Esteemed Attendees

## Welcome Everyone,

We are delighted to have you all here as we delve into the exciting world of health informatics. The TWU College of Nursing, our faculty, staff and students have been honored by the ongoing support from the Houston J. and Florence A. Doswell Foundation. This foundation provides generous support through endowed chairs, ongoing nursing research, and in many other areas. Each year more than 500 nurses in the baccalaureate, master's, and doctoral programs graduate from the Houston J and Florence a Doswell College of Nursing.

Dr. Mikyoung Lee, Professor and Doswell Endowed Chair for Informatics and Healthcare Transformation, and the conference planning committee have prepared a wonderful conference for you. The role of information technology, the use of health informatics systems, and the integration into healthcare are integral in assuring we move smoothly into the very complex and matrixed future ahead. I hope you will find the Doswell Health Informatics Conference informative, engaging, and productive.



Warm regards,

Damon B. Cottrell

PhD, DNP, APRN, FNP-C, CCNS, ACNS-BC

Professor & Interim Dean of the College of Nursing



**COLLEGE OF NURSING**  
TEXAS WOMAN'S UNIVERSITY

# Greetings Esteemed Attendees

## Welcome to the 2023 Doswell Health Informatics Conference!

As healthcare becomes increasingly complex, the need for advanced health informatics solutions has never been greater. This conference promises to be a valuable opportunity to learn from each other, exchange ideas, and advance the field of health informatics.

This year's conference features two outstanding keynote speakers: Dr. Anjum Khurshid and Mrs. Katherine Lusk. Dr. Khurshid will present on building capacity for population health informatics and will share examples of health informatics solutions for a learning health system to address data challenges for improving population health. Mrs. Lusk will point out the current state of interoperability in health care and strategies to bridge the gap between standards, content, and needs of the clinical end-user.

We received many abstract submissions this year. All the abstracts underwent a rigorous blinded peer-review process, and high quality abstracts were selected. Congratulations to all the selected podium and poster presenters!!

I would like to extend my sincere gratitude to the Houston J. and Florence A. Doswell Foundation for generous support to make this conference a resounding success. This sponsorship allowed complimentary registration, parking, breakfast, lunch buffet, and CEUs, making this scholarly gathering even more accessible and enjoyable. I'd also like to express my heartfelt thanks to our conference planning committee, whose unwavering dedication and hard work have been crucial in ensuring this event runs smoothly. Without their commitment and expertise, this conference would not be possible.

We offer the opportunity for participants to donate to the [Health Informatics Scholarship Fund](#), which will play a crucial role in supporting the development of the health informatics workforce and promoting research in this field. Your generous donation would be greatly appreciated and will make a significant impact on the future of health informatics.

Thank you all for your participation in this conference! Let's make the most of this opportunity to connect and collaborate towards improving healthcare for all.



Mikyoung A. Lee, PhD, RN  
Professor, Doswell Endowed Chair  
for Informatics and Healthcare Transformation  
Texas Woman's University  
Houston J. and Florence A. Doswell College of Nursing



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The 2023 Doswell Health Informatics Conference is centered on the theme "Enhancing Clinician and Patient Well-Being through Health Informatics" and provides a platform for sharing best practices, identifying gaps, exploring opportunities and discussing strategies to improve healthcare provider and patient safety, health promotion, workflow efficiency, and healthcare data management and utilization. The conference is designed for a wide range of professionals, including students, researchers, faculty, clinicians, scientists, informaticists, industry representatives, public health officials, community organizations, healthcare policymakers, and consultants.

### Program Objectives:

- Identify best practices and discuss strategies to enhance patient well-being, including patient safety, disease prevention, and health promotion, through health informatics applications
- Explore the value of interoperability of health information and data across entities on the healthcare continuum and review relevant standards and policies
- Discuss challenges and solutions for achieving effective data exchange and sharing
- Discuss solutions for healthcare providers to improve workflow efficiency, reduce the health care documentation burden, and ensure healthy and safe work environments
- Explore opportunities to effectively acquire, process, and utilize healthcare data from various sources
- Discuss educational pedagogies and best practices for developing future leaders in health informatics and data science

## 2023 Keynote Speakers

**ANJUM KHURSHID, MD, PHD, FAMIA**  
Chief Data Scientist, Sentinel Operations Center  
Faculty, Harvard Medical School and Harvard Pilgrim  
Health Care Institute



Anjum Khurshid, MD, PhD was previously the Co-Chief of Health Informatics in the Data Science and Epidemiology Division at the Department of Population Health. He also served as the inaugural Director of Data Integration at Dell Medical School at the University of Texas at Austin.

He is currently the co-principal investigator on community-wide projects for integrating social determinants of health in electronic health records and developing patient engagement platforms for health data.

Khurshid received the Health Informatics Innovator Award in 2013 as the principal investigator of the \$13.5 million Crescent City Beacon Community Program in New Orleans. He also established the Louisiana Clinical Data Research Network (now REACHnet) as part of PCORnet.

**KATHERINE LUSK, MHSM, RHIA, FAHIMA**  
Vice President of Strategic Partnerships, Texas Health  
Services Authority  
2021 President, American Health Information Management  
Association (AHIMA)



Katherine Lusk, MHSM, RHIA, FAHIMA focuses on cross-industry facilitation of trusted data exchange that supports innovation and data mobility in her role as the Vice President of Strategic Partnerships for the Texas Health Services Authority.

She has long championed interoperability serving in multiple roles including leading the THSA Interoperability Collaborative, DirectTrust Board, eHealth Exchange Workgroup, ONC Patient Identity Workgroup, Epic's Care Everywhere Governing Council, ONC/AHIMA Project US Companion Guide, AHIMA Board and as the AHIMA 2021 President and Chair.

She is a strong believer in the power of informatics to bridge health care delivery gaps.

# Agenda

7:30 - 8:30 a.m. **Conference Check-in** 1st Floor Lobby

8:30 - 9 a.m. **Welcome Remarks | Doswell Foundation Appreciation** Room 1010 (Auditorium)

9-10:15 a.m. **Opening Keynote - Anjum Khurshid, MD, PhD, FAMIA** Room 1010 (Auditorium)



Building Capacity for Population Health Informatics

10:30 a.m - 12 p.m. **Session A: Clinical Informatics / Patient Safety and Workplace Safety** Room 2102

*Moderator: Joni Padden, DNP, RN*



### Keeping Patients and Staff Safe

Toni Akers, MBA, BSN, RN-BC  
Vice President of Nursing Informatics and Clinical Excellence  
Baylor Scott & White Health System | Temple, Texas



### Real-Time data display for real-time Results: Continuous HAI reduction journey

Jennifer Witten, MSN, RN-BC  
Division Director of Clinical Informatics  
Medical City Healthcare | Dallas-Fort Worth Metroplex, Texas



### Never Say Never: Leveraging Technology and the System Proactively

Grace Baldauf, MSN, RN-BC  
Director of Clinical Informatics  
Medical City Healthcare | Plano, Texas

10:30 a.m - 12 p.m. **Session B: Public Health / Community Informatics** Room 2702

*Moderator: Jennifer Miff, MBA, BA*



### Contextualized SDOH Insights to Achieve Health Equity

Venkatraghavan Sundaram, M-Pharm, PhD  
Program Manager  
Parkland Center for Clinical Innovation | Dallas, Texas



### EMR-Guided Crowdsourcing to Identify Socially Disconnected Older Patients

Marsha Ingle, MA  
Senior Director of Community Health Improvement  
Texas Health Resources | Arlington, Texas



### Data Integration for Evaluating Impact of GLOW Program on 911 Calls

Susan McBride, PhD, RN-BC, CPHIMS, FAAN  
Associate Dean of Research  
The University of Texas at Tyler School of Nursing | Tyler, Texas

--- AGENDA CONTINUES ON NEXT PAGE ---

Moderator: Ashley Hunsucker, MSN, RN

**Nurse Well-being, Curriculum-based EHR Education, and the New Essentials of Practice**

Mari Tietze, PhD, RN-BC, FHIMSS, FAAN

Myrna R. Pickard Endowed Professor

The University of Texas at Arlington College of Nursing and Health Innovation | Arlington, Texas

**Roles of Nurses in mHealth Development**

Mikyoung A. Lee, PhD, RN

Professor, Doswell Endowed Chair for Informatics and Healthcare Transformation

Texas Woman's University College of Nursing | Dallas, Texas

**Implementing Simulation to Improve Nurse Confidence in Emergencies**

Laurine Ndlovu, DNP, RN, MEDSURG-BC, NPD-BC

NEPD Specialist - Transition to Practice Coordinator

Methodist Dallas Medical Center | Dallas, Texas

12 - 1 p.m.

**LUNCH**

IHSD 1st Floor Lobby, 3rd Floor Cafeteria

1 - 1:30 p.m.

**Poster Presentations and Exhibition Visits**

IHSD 1st Floor Lobby

**Re-visioning of a Nursing Informatics Course with Translational Pedagogy**

Heather DeGrande, PhD, CCRN-K

Assistant Professor

Texas A&amp;M University at Corpus Christi

Corpus Christi, Texas

**Improving Transparency in Caring for Psychiatric Involuntary Hold Patients**

Shalet Thomas, MSN, RN-BC

Senior Nursing Informatics Specialist

Parkland Health Systems

Dallas, Texas

**Predicting Heart Disease Through Supervised Machine Learning Algorithms**

Estefanie Garduno, MD

Project Manager

UT Southwestern Medical Center

Dallas, Texas

**The Disaster Informatics Literature Pre-Pandemic and During the Pandemic**

Ngan Tran, MS, BASc

PhD student, Research Assistant

University of North Texas

Denton, Texas

**An Exploration of COVID-19 Vulnerabilities in Six Texas Counties**

Emily McAllister, MSN, APRN, FNP-BC

Family Nurse Practitioner, DNP Student

Texas Woman's University

Dallas, Texas

**Algorithm-Based CHW Public Health Emergency Preparedness for Older Adults**

Teresa Wagner, DrPH, MS, CPH, RD/LD, CPPS,

CHWI, DipACLM, CHWC

Project Dir., Texas Center for Health Disparities,

University of North Texas Health Science Center

Clinical Executive for Health Literacy, SaferCare Texas

Fort Worth, Texas

**A Meta-Analysis of Obesity Interventions among South Korean Children and Adolescents**

Jaesin Sa, PhD

Assistant Professor

Texas Woman's University

Denton, Texas

**Explore Resources to Decrease Hospital Readmissions for the Elderly with Type II Diabetes Mellitus Resulting from Malnutrition**

Sin Yu Wan, MS, RD, LD

Registered Dietitian

Texas Woman's University

Denton, Texas

--- AGENDA CONTINUES ON NEXT PAGE ---

*Moderator: Lorrie Burkhalter, MS, MPH, CCRC*



**Know Thy Patient: Clustering Patient Population through Healthcare Access**

Yusuf Tamer, PhD  
Principal Data and Applied Scientist  
Parkland Center for Clinical Innovation | Dallas, Texas



**Modeling Rehabilitation Provider Shortage in Texas with Population Data**

Madeline Ratoza, PT, DPT  
Academic Coordinator for Clinical Education / PhD Candidate  
University of St. Augustine for Health Sciences | Austin, Texas  
Texas Woman's University | Houston, Texas

*Moderator: Kendra Sutton, DNP, RN-BC, NEA-BC*



**Attack of the Bots: Researchers Beware**

Dixie Rose, PhD, RN, ACUE  
Clinical Instructor  
The University of Texas at Tyler School of Nursing | Tyler, Texas



**REDCap on FHIR: Clinical Data Interoperability Services**

Teresa Bosler, PMP  
Senior Data Analyst  
Vanderbilt University Medical Center | Nashville, Tenn.  
UT Southwestern Medical Center | Dallas, Texas



**Closing Keynote - Katherine Lusk, MHS, RHIA, FAHIMA**

Standards, Content and Informatics - Reality Meets Innovation

Closing Remarks

Evaluation and Certificates (5.5 CNEs and HIMSS CEUs available)

# Podium Presenters and Abstracts

## Keeping Patients and Staff Safe

Toni Akers MBA, BSN, RN-BC<sup>1</sup> & Tami Ferguson<sup>2</sup>

<sup>1</sup>Baylor Scott & White Health System, Temple, TX; <sup>2</sup>ATOS IT Solutions and Services, Dallas, TX

**Background/Significance** Incidents of violence against healthcare workers continue to increase and are even reported in the evening news. Baylor Scott & White (BSW) developed a Safe Health Care Environment policy outlining behaviors and actions that are considered unacceptable. A comprehensive approach was developed that included education, learning modules, policy changes and technology.

**Purpose** In the spirit of “we are in it together”, the Nurse Call team holistically evaluated all available technologies.

**Methods** Utilizing a multi-prong approach to keep our staff and patients safe, the clinical team has multiple options to alert Public Safety and other team members to receive help quickly.

**Results** The nurses in many of our hospital areas utilize a hand-held Zebra device. It is a mobile devices supporting multiple functions including telephone, barcode reading, image capture and computing. Access to quickly active a medical, security or other facility alert by eliminating steps was deployed first. Activating the button on the back of the Zebra to automatically call Security implemented as phase two. The “staff duress” button implementation completed in December 2022 and the impact data is being collected. The nurse call system was identified as another technology option. Partnering again with BSW Public Safety, to activate a Security Button on the staff terminal in the patient room. The button notifies Public Safety and opens a communication line between the staff member and the operator. Enabling the duress button located on the staff tracking badge is another means for the staff to alert others. Currently the alert provides the staff member’s name and location to the console in the nurse’s work area.

**Conclusions/Implications** Deployment of both technologies across the BSW acute care hospitals is in process. Once implementation is complete BSW will gather data and determine the impact.

### References

1. Kirton C. The Silent Epidemic of Workplace Violence. *AJN, American Journal of Nursing*. 2023; 123 (2): 7-7. doi: 10.1097/01.NAJ.0000919624.42779.0c.

**Keywords:** Safety, Nurse Call, Workplace Violence

# Never Say Never: Leveraging Technology and the System Proactively

Grace Baldauf, MSN, RN-BC

Medical City Healthcare, Plano, TX

**Background/Significance** Retained Surgical Items (RSIs) are “never events.” With Level One Trauma designation and high surgical volumes, Hospital A must successfully manage possible retained surgical items. Gaps in managing RSIs include missing orders for the correct imaging exam, not adhering to policy-specific reasons to obtain imaging and not communicating the possible missing item/exam reason to the reading radiologist. Additional considerations include maintaining tracking reporting capabilities and continued compliance with appropriate billing practices.

**Purpose** Leveraging technology to identify and implement a system-based approach for the multi-disciplinary management processes for possible or suspected retained surgical items.

**Methods** A multi-disciplinary team comprised of subject matter experts from clinical informatics, risk management, compliance, the operating room and radiology examined the clinical and non-clinical workflows involved in managing possible retained surgical items. Four key workflows are identified and defined as data points to measure outcomes. Data Point 1: Obtaining the correct radiological study order (with operative field specificity) directly from the surgeon. Data Point 2: Communicating which item (or unknown) is potentially retained from the operating room to the reading radiologist. Data Point 3: Capturing the policy-specific reason for performing the exam (no pre-procedural count, incorrect count, greater than 50 soft goods or retained foreign body). Data Point 4: Enabling tracking of retained surgical items for reporting purposes to the accreditation authority. Implementing an order set with the correct exams and appropriate indications automated ordering and communication. Informatics placed a tracker on this order set to address reporting needs.

**Results** A system-based approach significantly improved capturing of data points and facilitated communication between the multi-disciplinary departments.

**Conclusions/Implications** Automating processes, prefilling indications for radiology studies and capturing data within a queryable electronic health record brings the needs of clinical end users, radiology, compliance and the quality department together in a multi-disciplinary approach. This process engages a high-leverage, system based solution<sup>1</sup> and minimizes education as a sole intervention due to its “weak improvement strategy” and low-leverage.<sup>1</sup> Education is necessary but is rarely sufficient to result in sustained change.<sup>2</sup>

## References

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**Keywords:** Systems-Based, Multi-Disciplinary, Proactive

## REDCap on FHIR: Clinical Data Interoperability Services

Alex C. Cheng, PhD, MEM,<sup>1</sup> Stephany N. Duda, PhD,<sup>1</sup> Rob Taylor, MA,<sup>1</sup> Francesco Delacqua,<sup>1</sup> Adam A. Lewis, MS,<sup>1</sup> Teresa Bosler, PMP<sup>2</sup>, Kevin B. Johnson, MD, MS,<sup>1</sup> Paul A. Harris, PhD<sup>1</sup>

<sup>1</sup>Vanderbilt University Medical Center, Nashville, TN; <sup>2</sup>UT Southwestern Medical Center, Dallas, TX

**Background/Significance** Despite the widespread use of electronic data capture (EDC) systems for research and electronic health records (EHR), most transfer of data between EHR and EDC systems is manual and error-prone. Increased adoption of Health Level Seven Fast Healthcare Interoperability Resource (FHIR) application programming interfaces (APIs) in recent years by EHR systems has increased the availability of patient data for external applications such as REDCap.

**Objective** Describe the development of the REDCap Clinical Data Interoperability Services (CDIS) module that provides seamless data exchange between the REDCap research EDC and any EHR system with an FHIR API. CDIS enables end users to independently set up their data collection projects, map EHR data to fields, and adjudicate data transfer without project-by-project involvement from Health Information Technology staff.

**Methods** We identified two use cases for EHR data transfer into REDCap. Clinical Data Pull automatically pulls EHR data into user-defined REDCap fields and replaces the workflow of having to transcribe or copy and paste data from the EHR. Clinical Data Mart collects all specified data for a patient over a given time period and replaces the process of importing EHR data for registries from research databases. With an iterative process, we designed our access control, authentication, variable selection, and mapping interfaces in such a way that end users could easily set up and use CDIS.

**Results** Since its release, the REDCap CDIS has been used to pull over 58 million data points for 198 projects at Vanderbilt University Medical Center. Software and documentation are available through the REDCap Consortium.

**Conclusions/Implications** The new CDIS module leverages the FHIR standard to enable real-time and direct data extraction from the EHR. Researchers can self-service the mapping and adjudication of EHR data into REDCap. The uptake of CDIS at VUMC and other REDCap consortium sites is improving the accuracy and efficiency of EHR data collection by reducing the need for manual transcription and flat file uploads.

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**Keywords:** Electronic Health Record; Electronic Data Capture; Clinical Research; Fast Healthcare Interoperability Resources

## EMR-Guided Crowdsourcing to Identify Socially Disconnected Older Patients

Marsha Ingle, MA,<sup>1</sup> Melanie Nieswiadomy, MSSW, LCSW-S,<sup>1</sup> Joy Griffin, RN,<sup>1</sup> Sherry Kincade, CHW,<sup>1</sup> Naomi Somerhalder, CCMA,<sup>1</sup> Genevieve Boak, MPH,<sup>1</sup> Matthew Lee Smith, PhD, MPH, CHES<sup>2</sup>

<sup>1</sup>Texas Health Resources, Arlington, TX; <sup>2</sup> Texas A&M University, College Station, TX

**Background/Significance** Social isolation and loneliness (SIL) among older adults have become more pronounced and widespread since the COVID-19 pandemic. Despite the pervasiveness of SIL and the ability of healthcare professionals to identify risk for social disconnectedness in clinical settings, these risks are largely unseen and under-recognized among older patients. As such, using health information systems shows promise to identify at-risk older patients and recruit them to social engagement activities.

**Purpose** To assess the utility of using electronic medical records (EMR) to guide crowdsourcing recruitment techniques that identify older patients at risk for social disconnectedness and engage them in social engagement activities.

**Methods** The Reduce Social Isolation and Lift Outcome for Seniors (SILOS) program was created by Texas Health Resources to screen older adults for social disconnectedness and link them to community services and programs. Eligible patients must reside in predetermined low-income ZIP Codes and be ages 50 years and older. To complement in-person and telephonic recruitment of at-risk patients, the Reduce SILOS program introduced crowdsourcing techniques utilizing EMR. A text messaging initiative sent risk screeners to older patients 30-days post-discharge, and banners were added in the MyChart patient record portal to assess risk. The risk assessment included the 4-item Upstream Social Interaction Risk Screener (U-SIRS-4), which was collected using Qualtrics. At-risk patients were asked if they wanted follow-up calls, and if so, asked to identify the types of social engagement activities they were interested in.

**Results** Of approximately 6,000 eligible older patients in the predefined geographic areas, 1,593 patients completed the risk assessment between December 2021 and December 2022. Of those, 65% screened as being at-risk for social disconnectedness. Of the 1,043 at-risk patients, 19% wanted to be contacted immediately about social engagement activities and 40% wanted to be contacted “at a later time.”

**Conclusions/Implications** Findings reinforce EMR’s utility to identify harder-to-reach and at-risk patients and recruit them into programs and services to improve care and outcomes. This crowdsourcing initiative facilitated targeted recruitment and increased program enrollment; however, efforts are needed to expand the use of health information systems in service-oriented healthcare initiatives.

**Keywords:** Crowdsourcing, Service Recruitment, Older Patients

## Roles of Nurses in mHealth Development

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**Background/Significance** More than 350,000 mobile health (mHealth) applications are available in major app stores worldwide, including medical, healthcare, and fitness apps. Many apps focus on condition management, such as mental and behavioral health disorders, diabetes, and heart and circulatory system conditions.<sup>1</sup> Unfortunately, development and implementation of the apps is frequently unsuccessful because of misalignment between the needs of users (patients and healthcare providers) and the app functionality.<sup>2</sup> Nurses are well-positioned to help address this challenge given their role as coordinators and teachers of care. However, it is unclear how and if nurses assume roles in mhealth app development.

**Purpose** This systematic scoping review aimed to reveal how nurses are involved in mhealth development.

**Methods** We followed Levac et al's six-stage methodology of scoping review.<sup>3</sup> Fourteen databases were searched for articles on the role of nurses in mHealth app development. All screening and data extraction was done in duplicate by two independent researchers. Data were synthesized by the Software Development Life Cycle (SDLC): planning, gathering requirements, design and prototyping, software development, and testing. Our initial searches yielded 4113 items, of which 1853 were duplicates. Of the 2260 titles and abstracts screened, 253 were considered in full text. Of these, 74 articles were included in our analysis.

**Results** Nurses were involved in mhealth app development across all SDLC phases, but primarily in design and prototyping ( $n = 55$ ), requirements gathering ( $n = 51$ ), and testing ( $n = 48$ ). Nurses most often took the role of evaluator during the testing or design and prototyping, followed by subject matter expert during the requirement gathering phase. Nurses were infrequently involved in software development or planning.

**Conclusions/Implications** Although nurses were represented throughout the development process, their level of involvement was concentrated in specific phases and roles. Nurses and nurse informaticists have good understanding of patient care process, clinical flow, healthcare terminologies and standards, data exchange and interoperability, and outcome measurements. Thus, nurses' involvement at all phases of app development is imperative to ensure mHealth apps are optimized to meet user needs and provide comprehensive benefits to patients, providers, and care systems.

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**Keywords:** Nurses, mHealth Development

# Data Integration for Evaluating Impact of GLOW Program on 911 Calls

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**Background/Significance** The Greater Longview Optimal Wellness (GLOW) organization is one of six Texas Accountable Communities for Health (TACHI)<sup>1</sup> organizations funded by the Episcopal Health Foundation. GLOW is a not-for-profit organization representing a multi-agency collaborative in Longview and Gregg counties in East Texas. GLOW's mission is to: 1) identify top utilizers of 911 system; 2) once identified, these potential clients will be enrolled into GLOW, navigated to community service organizations that will alleviate unmet needs using social determinates of health; and 3) perform a community health paramedicine visit to reduce 911 system utilization and readmission rates. Community-based initiatives such as the GLOW initiative have significant impact on cost and health.<sup>2,3</sup> The current GLOW program presents challenges including complexity of data management needed to derive valid and reliable data for evaluating GLOW impact; and a need for a streamlined, redesigned data workflow to capture fully integrated research data to measure impact of the GLOW program. The City of Longview needs to determine the effectiveness of the GLOW program decreasing 911 calls, hospital admissions and ED visits for a cohort of individuals within the community that are high utilizers of 911 (> 8 calls in a year) or in need of GLOW community services.

**Purpose** This presentation aims to present the evaluation plan with emphasis on the integrated data strategy to capture data needed, including social determinants of health, hospital data, assessment and intervention data and demographics.

**Methods** Methods for the data integration plan of multiple disparate data systems from area hospitals, RightCare Assessment tool and multiple City sources of data captured on the cohort of interest will be presented.

**Results** The results of that data strategy for aim one of the evaluation plan will be presented demonstrating how public health informatics data management can be complex and contribute to evaluation strategies of programs such as the GLOW initiative. Preliminary data on the impact of the program on 911 calls will also be presented.

**Conclusions/Implications** Implications are significant given the challenges with integrating public health data for interventional studies and the need to standardize the capture of social determinants of health.

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**Keywords:** Social Determinants of Health, Public Health Informatics, Data Interoperability

# Implementing Simulation to Improve Nurse Confidence in Emergencies

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**Background/Significance** The first five minutes are the most crucial for in-hospital cardiopulmonary arrests, and the actions of a nurse play an essential role. Most nurses do not feel confident dealing with emergencies. This project implemented the first five minutes of a code quality improvement project and assessed the impact of mock code simulation on the medical-surgical nurse's confidence in emergency response. The medical-surgical nurses reported being uncomfortable in emergencies. The lack of confidence was reflected in the quality of cardiopulmonary resuscitation provided and the data collected from the code blue records.

**Purpose** The project aimed to improve performance and increase nurses' self-confidence in emergency response using simulation. The focus was on the first five minutes of a cardiac arrest. Simulation and participation in mock codes are evidence-based practices to increase nurse confidence and improve performance.<sup>1</sup> The project objectives were: (a) to implement code blue simulation to improve performance and increasing nurses' self-confidence in emergency response, (b) to improve performance measured by defibrillation time, and (c) to increase self-reported nurse confidence.

**Methods** The participants attended information sessions about the project and signed informed consents. Then, they completed the emergency response confidence tool (ERCT) as pre-survey and, post-survey data. Education was provided on the simulation and basic life support protocols as required by the Get with The Guidelines Program (GWTG). Over eight weeks, a formative evaluation was done during staff meetings and safety huddles to address concerns and answer questions. Simulation was conducted on the medical-surgical cardiology unit. Case study discussions and the Kahoot game were used as formative evaluation.

**Results** The overall nurse confidence significantly increased ( $p < .0001$ ). All the 17 questions showed a significant increase in confidence level except for one question where the confidence of the post-survey question had no significant difference from the pre-survey.

**Conclusions/Implications** Simulation has an impact on nurse confidence. Implementing code simulation increases medical-surgical nurses' confidence in emergency response.

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**Keywords:** Code Blue, Medical-Surgical, Mock Codes, Nurse Confidence, Simulation

# Modeling Rehabilitation Provider Shortage in Texas with Population Data

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**Background/Significance** Social determinants of Health are non-medical factors that have significant influence on health outcomes.<sup>1,2</sup> Access to healthcare, including insurance coverage, services, timeliness, and workforce, is one social factor contributing to health outcomes.<sup>3</sup> Currently, there are models for evaluating and understanding healthcare access in primary care, dentistry, and mental health; however, to date, we do not have models for evaluating access in rehabilitation.

**Purpose** The purpose of this study is to develop a model for evaluating healthcare provider shortage areas in rehabilitation. This project seeks (1) to investigate geographic access to rehabilitation using geospatial analysis, and (2) to model access in rehabilitation using an HPSA model.

**Methods** This study combines data from the Texas Behavioral Risk Factor Surveillance System (BRFSS) Public Use Data Files, the Texas Physical Therapy Examiners Mailing List, and the American Community Survey Data.<sup>4-6</sup> Using R version 4.2.2, ArcGIS, and SatScan, geographic variability of the PT/OT provider ratio across Texas is assessed by comparing ratios of providers to population within census tracts. Spatial access to rehabilitation services in comparison to population of people with disability is assessed using spatial scan statistic and network analysis. An HPSA model in rehabilitation is calculated by census tract using population to provider ratio, percent below the federal poverty level, travel time to nearest source of care, and indicators of need derived from the BRFSS. Finally, a linear regression is performed with primary care HPSA as the predictor and rehabilitation HPSA as the dependent variable.

**Results** This study provides an initial framework for how we may be able to measure and track access to rehabilitation services in other states. Also, this study provides an initial understanding as to how well rehabilitation shortages can be predicted from primary care shortage areas.

**Conclusions/Implications** Overall, this study contributes to an understanding of access in physical therapy using population health informatics, which is a nascent field within rehabilitation.

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**Keywords:** Access, Rehabilitation, Geospatial Analysis

## Attack of the Bots: Researchers Beware

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**Background/Significance** Over the past decade, web-based surveys have been used with increased frequency by researchers as a convenient and cost-effective tool for data collection. More recently, their utility has proven beneficial in conducting public health research during the COVID-19 pandemic while maintaining social distancing.<sup>1</sup> Web-based surveys have always been vulnerable to fraud,<sup>2</sup> but with continued advances in information technology, fraud has become harder to detect and often occurs in the form of bot attacks.<sup>3</sup> These attacks call into question the scientific integrity of data collected through the web-based surveys.<sup>3</sup>

**Purpose** The purpose of this presentation is to present a plan for data cleansing that can be used to identify fraudulent web based survey responses and work toward maintaining data integrity.

**Methods** A step-by-step data cleansing process was devised to evaluate data from a web-based survey that experienced a bot attack with 6,961 returned records over a 4-day period.

**Results** The heuristics used, and the preliminary results of the data cleansing process will be presented, including: the frequencies and percentages of potentially nonfraudulent and fraudulent records.

**Conclusions/Implications** With the increased use of web-based surveys by researchers, and equally the increasing sophistication of bot attacks, health informatics professionals will need to stay abreast of AI methods used in bot attacks as well as in counter measures that can be employed to screen datasets for fraud and promote scientific rigor.

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**Keywords:** Bot Attack, Data Cleansing, Data Integrity

## Contextualized SDOH Insights to Achieve Health Equity

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**Background/Significance** Despite the increasing awareness of the connection between Social Determinant of Health (SDOH), health, and health equity, few organizations who work with vulnerable populations have adequate contextualized insights to better address health and non-health needs. Contextualization is crucial in transforming data into meaningful, actionable information to inform programs/policies. Reasons for lack of context include disparate data sources and lack of both normalization across a geography and a community gold standard enabling broad collaboration across organizations.

**Purpose** To create a tool enabling local stakeholders to visualize key SDOH indicators providing deep community vulnerability insights needed to create resources, programs, and collaborations to improve whole person health and achieve health equity.

**Methods** The Community Vulnerability Compass (CVC) is a web-based tool enabling its users to visualize and more fully understand the context and complexities of the social barriers to health, access, and well-being of a community's most vulnerable populations. CVC comprises of 26 clinical and socio-economic indicators clustered into four thematic domains denoting the health, resiliency, and economic vibrancy of neighborhoods. The CVC groups levels of vulnerability for each of its four subindexes and 26 indicators into quintiles from lowest to highest vulnerability (i.e. Very High to Very Low). The user-friendly dashboard offers individuals to view which indexes, subindexes, and the composite indicators that impact vulnerability at the county, ZIP code, census tract, and block-group levels.

**Results** Organizations such as health systems, health departments, and community-based organizations are successfully leveraging CVC to improve health and well-being across communities. For example, a health system and health department are analyzing (via side-by-side dashboards) CVC SDOH data and chronic disease data to better understand the specific SDOH factors impacting disease prevalence to design and drive improved care programs.

**Conclusions/Implications** Community Vulnerability Compass (CVC) is a novel tool to visualize SDOH starting at the block level to reflect both individual- and neighborhood-level characteristics and related impacts on social vulnerabilities. CVC helps organizations across Texas seeking to close the disparities gaps across the most vulnerable neighborhoods by providing critical, contextualized information to prioritize strategic imperatives and achieve health equity.

**Keywords:** SDOH, Health Equity, Population Health

# Know Thy Patient: Clustering Patient Population through Healthcare Access

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**Background/Significance** Traditional disease-based clinical programs have been effective in managing and treating specific medical conditions, but often fail to holistically treat the whole person. This can result in negative patient experiences and suboptimal (particularly long-term) clinical outcomes. In part, this failure is because traditional programs may not align with or concurrently address the complex needs of patients, particularly with respect to barriers to health care access (e.g., social vulnerabilities, transportation barriers, lack of insurance coverage). These traditional programs may also fail to incorporate and facilitate stronger provider-to-patient and patient-to-patient connections and support.

**Purpose** Instead of grouping patients by their primary disease or diagnosis (diabetes, hypertension, etc.), grouping patients into cohorts with other patients who have high degrees of similarity across clinical, personal, and behavioral characteristics can better facilitate the creation and successful implementation of programs aiming to improve health outcomes. Programs adopting cohort-similarity approaches can more readily incorporate a wide variety of patient-centered, whole-person approaches to care, such as integrated practice units, targeted digital programs, virtual and in-person support groups, and focused outreach and communication.

**Methods** As part of its 5-year strategic plan to achieve a healthier community, the Dallas County Hospital District - f/k/a Parkland Health & Hospital System, now known as Parkland Health (Parkland) - partnered with the Parkland Center for Clinical Innovation to develop Know Thy Patient, a novel, advanced analytics process to group patients (by factors other than disease groups) to better understand the community and patient population Parkland serves. These advanced analytics provide insights that can improve health care access by supporting and informing a better design of clinical programs enabling new community partnerships, enhanced models for patient engagement, and expanded pathways for treatment via evolving digital strategies. To achieve a more access-centric patient population segmentation - that incorporates non-disease-specific patient information - we developed an approach with three distinct steps: (1) creating a holistic patient record and identifying key metrics for clustering, (2) clustering the patient population, and (3) characterizing the clusters and extracting insights to enhance access and quality of care. After clustering, we reintroduced all medical diagnosis data and used both the defining and descriptor metrics to perform descriptive analyses to understand cluster profiles. We mapped out clusters to identify neighborhoods of focus, clinic utilization, and travel times to the closest clinic/primary hospital. We also profiled clusters for demographics, cost of care, medical complexity, health care engagement (whether virtual or in-person and including COVID-19 vaccination), and SDOH. Finally, we provided the data-driven insights revealed through clustering and characterization to Parkland executives to help their strategic decision-making and program/intervention planning.

**Results** Two of our clusters made up 22.7% of patients but accounted for 69.9% of all visits. Both groups were clinically complex (based on CCI), had very high prevalence of hypertension (Two clusters combined has 2.7 times higher than the average of Parkland Population) and diabetes (Two clusters combined has 3 times higher than the average of Parkland Population), and utilized mental-behavioral health 3 to 4 times more than the average Parkland patient. They also had 2 times higher cost per patient per year. They were mostly married, Hispanic females ages 18–64 (38.4% between 18–40; 56.7% between 40–64) who lived in a concentrated southern Dallas corridor. Eighty-seven percent were obese, 39% had a history of smoking, and 15% already had a chronic kidney disease diagnosis. Enrollment of these patients into multiple disease-specific programs (diabetes or hypertension), while individually effective, resulted in significant outpatient utilization due to their complex, multidimensional clinical and personal needs, taxing both the health system and the patients. These insights drove a decision to explore the individuals/clusters who were cardio-metabolically high risk (CMHR) and individuals with both diabetes and hypertension diagnoses to design access sites and programs consolidating clinical expertise and diagnostics to meet

these patients' complex needs and better manage their health. We determined that an integrated practice unit (IPU) designed around CMHR could serve a cohort of 46,253 patients already receiving care from Parkland.

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**Keywords:** Unsupervised Machine Learning, Clustering, Population Health, Data Science

# Nurse Well-being, Curriculum-based EHR Education, and the New Essentials of Practice

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**Background/Significance** In May of 2022, the U.S. Surgeon General released the Burnout report,<sup>1</sup> declaring healthcare worker burnout a public crisis. While electronic health records (EHRs) were designed to promote patient safety, workflow efficiency, and communication,<sup>2</sup> they have been found to contribute to burnout and lack of healthcare worker well-being.<sup>3</sup> The need is evident for experiential learning activities via curriculum-based academic EHR (aEHR) education that can facilitate nursing student workforce readiness. In the 2021 Essentials, the American Association of Colleges of Nursing identified *Informatics and Healthcare Technologies* as one of the 10 Domains of nursing practice essentials, which includes competency in the use of EHRs for undergraduate and graduate nursing students.<sup>4</sup> Studies show that integration of an aEHR into undergraduate curricula have many benefits including increasing readiness for practice by enhancing their electronic documentation skills<sup>5</sup> and confidence.<sup>6</sup>

**Purpose** This observational study aims to initiate two evaluation approaches to assess experiential learning activity using an aEHR. Targeted participants are in four courses: two graduate nursing practitioner practicums, one graduate nurse educator practicum, and one health informatics didactic-focused.

**Methods** A total of 54 students were targeted to participate in the study. The implementation team created customized cases that met the curriculum-based student learning outcomes and used those for practitioners simulated experiences. While nurse educator students developed an EHR instructional guide specific to their learner population of interest. This first-time aEHR implementation enabled an evaluation of student experiences for *usability* of the aEHR [System Usability Scale]<sup>7</sup> and nurse educators' perceived preparedness for their role as educators [five question survey].

**Results** Initial responses from graduate HI students have been reflected a positive experience with clarity of one's role. We believe the same will occur for graduate nursing students. Additional results are pending to be included in the conference presentation.

**Conclusions/Implications** This focus will optimally prepare graduate nursing students in use of the EHR, thereby addressing a key aspect of the technology-based burnout and lack of well-being.

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# Real-Time Data Display for Real-Time Results: Continuous HAI Reduction Journey

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**Background/Significance** Through the collaboration of the teams, the theories and models of DIKW, PDSA, and continuous organizational quality improvement overlapped and together grew the knowledge and wisdom in clinical judgment. The team used a combination of the Institute of Healthcare Improvement and the Institute of Safe Medication Practices frameworks to make changes.

**Purpose** In a tertiary trauma level-one healthcare facility, to utilize bundle compliance and leverage technology for real-time data display to decrease hospital-acquired infections (HAI) of catheter-acquired urinary tract infections (CAUTI) and central line-acquired bloodstream infections (CLABSI).

**Methods** Partnering with infection prevention, informatics, and nurse leadership to implement rapid improvement cycles to reduce hospital-acquired infections. Used rapid cycles of improvement along with root cause analysis tools with the incorporation of technology and a homegrown data display analytics tool to interface with nursing documentation and the ability to enter multidisciplinary comments. Incorporated the data in a multifaceted approach in daily safety reporting, throughput, leadership accountability, and rewards/recognition.

**Results** Year-over-year results are a reduction of CLABSI occurrences by 62% and a reduction of CAUTI occurrences by 57% in the face of higher utilization rates. Further research is needed to understand methods of translating data to the visual display to improve patient care and reduce HAIs.

**Conclusions/Implications** The result was positive when clinicians and leadership incorporated real-time data display to practice for HAI reduction. Leadership sets the tone and cadence for clinicians to incorporate data into daily practice. Multidisciplinary efforts between infection prevention, nursing, and informatics are crucial for meaningful implementation.

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# Poster Presenters and Abstracts

# Re-visioning of a Nursing Informatics Course with Translational Pedagogy

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**Background/Introduction** For nurse leaders to excel in their leadership roles in the clinical world of informatics, a comprehensive understanding of nursing informatics as translated within the broader scope of health informatics including clinical informatics and business intelligence is necessary. However, this translation is not consistently taught in graduate nursing leadership curricula.

**Purpose** The purpose of this project was, collaboratively from an interprofessional education stance, to re-vision an online graduate nursing informatics course using translational pedagogy. Examining nursing informatics through the lens of health informatics will develop students' ability to visualize, conceptualize, and understand how work in information systems has impacts on broader aspects of clinical and business decision-making. Further, this paradigm shift will enhance graduates' ability to utilize information systems in effective leadership decisions.

**Methods** Course objectives were assessed to ensure a translational approach was feasible within the existing course construct. We coined the term translational pedagogy: to teach how related concepts translate to one another and vice versa. The course content was mapped alongside a healthcare administration course integrating the two courses from a translational sense. The course was built integrating content from both courses with the overall goal of teaching students how the content translates to their study of nursing informatics. New module objectives were written to align with the course objectives.

**Results** The re-visioned nurse informatics course is being taught for the first time Spring 2023. Students are learning about nursing informatics in the context of health informatics. Projected outcomes include, students will develop an understanding and appreciation for the flow of clinical and non-clinical information throughout the healthcare organization: the clinical and business side. The appreciation for information flow will allow students to understand organizational decision making, and empower them with the knowledge to make informed, sound leadership decisions.

**Conclusions/Implications** Looking at nursing informatics through the lens of health informatics will develop students' ability to visualize, conceptualize, and understand how work in information systems has an impact on the broader aspects of clinical decision making and support. Further, this paradigm shift will enhance students' ability to utilize information systems in leadership decision-making.

**Keywords:** Nursing Informatics, Nursing Education in Leadership (graduate), Translational Pedagogy

# Predicting Heart Disease Through Supervised Machine Learning Algorithms

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**Background/Significance** Machine Learning is a subdomain of artificial intelligence. It describes the use of software algorithms to identify patterns in very large datasets. This is a promising new tool to improve healthcare diagnostics and risk prediction in highly relevant and common illnesses such as cardiovascular disease.

**Purpose** To develop an effective machine learning-supervised model capable of accurately diagnosing heart disease based on individual features.

**Methods** In this project, three machine learning models were used (Elastic net, logistic regression, and random forest) to identify individuals with heart disease. The discovery dataset used for model development included 303 subjects (138 with heart disease and 165 controls) and 14 predictor variables (Including traditional cardiovascular risk factors). The outcome variable was diagnosis of heart disease. The discovery dataset was split into training (70%), validation (10%), and testing (20%) subsets. Model development for elastic net and random forest was accomplished using the training and validation splits, whereas logistic regression was fit using only the training split. Hyperparameter selection was performed for elastic net model through cross validation (CV), and for logistic regression backward stepwise selection was used to select the predictors. Predictions were calculated using the testing split and the performance of the classifier was chosen based on the area under the receiver-operating-characteristic curve (AUC). Lastly, an external validation dataset ( $n = 295$ , 107 cases and 188 controls) was used to make predictions.

**Results** In the testing dataset, the elastic net model achieved AUC = 0.90 and accuracy of 0.88%, the logistic regression AUC of 0.95 and accuracy of 0.84%. For the Random Forest model an Out-of-Box error was 25.21%; the number of variables used at each split were 3 and the accuracy in the testing test was 0.81%.

**Conclusions/Implications** The logistic regression model outperformed the other models with an accuracy of 0.88% and an AUC of 0.95. In the external validation dataset, the accuracy was 77%. The final model included six variables: Sex, heart rate, ST depression induced in exercise, typical and atypical anginal pain and non-anginal pain.

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**Keywords:** Machine Learning, Modeling Techniques, Cardiovascular Disease

# An Exploration of COVID-19 Vulnerabilities in Six Texas Counties

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**Background/Significance** COVID-19 prevalence and deaths have been disproportionate by geographic location and social determinants, exacerbating health disparities.<sup>1,2</sup> It is essential to understand the needs of vulnerable communities and frame public policies to lessen vulnerabilities arising from social determinants of health.

**Purpose** This project aimed to investigate COVID-19 community vulnerabilities in the six Texas counties with the highest populations and the highest COVID-19 death counts.

**Methods** According to the 2020 United States (US) Census,<sup>3</sup> Harris, Dallas, Bexar, Tarrant, and Travis were the five most populated Texas counties. Texas Department of State Health Services COVID-19 Dashboard<sup>4</sup> revealed that Harris, Dallas, Bexar, Tarrant, and El Paso counties had the highest COVID-19 death counts. The COVID-19 vulnerabilities for Harris, Dallas, Bexar, Tarrant, Travis, and El Paso counties were explored using the US COVID-19 Community Vulnerability Index (US-CCVI).<sup>5,6</sup> They were compared to the vulnerabilities in the state of Texas and the US.

**Results** The overall vulnerability scores of the six counties, ranging from 0.83 to 0.96, were lower than Texas (0.98) and higher than the United States (0.50) scores. Harris, Dallas, and El Paso Counties received high vulnerability scores regarding Socioeconomic Status (0.93-0.98), similar to Texas (0.96); however, Travis County had the lowest vulnerability score (0.62). Minority populations most vulnerable to COVID-19 mortality varied across counties, but Hispanics and Blacks were highly vulnerable.

**Conclusions/Implications** Further investigation of granular social determinants data is needed to develop local policy and public health interventions that will impact vulnerable communities meaningfully. The utilization of health informatics is essential for assessing and analyzing granular data for local policy to address social determinants of health and health equity.

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**Keywords:** COVID-19 Vulnerabilities, Texas, US COVID-19 Community Vulnerability Index

# A Meta-Analysis of Obesity Interventions among South Korean Children and Adolescents

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**Background/Significance** The childhood obesity epidemic has been a major public health issue not only to Western countries but also to Asian countries.<sup>1,2</sup> Among Asian countries, the prevalence of childhood obesity in South Korea (hereafter 'Korea') is high,<sup>3</sup> and a sharp rise in the obesity prevalence among Korean children and adolescents was noted over the last 3 decades.<sup>4</sup> Various interventions have been tested to prevent or treat childhood obesity in Korea.<sup>5</sup> However, the overall effect of those interventions is unclear, as very few reviews and meta-analyses were specific to Korean children and adolescents.<sup>5,6</sup>

**Purpose** To examine the overall effect of obesity interventions among Korean children and adolescents, while also examining differences by sex, age group, baseline weight category, intervention duration, number of intervention components, and type of intervention components.

**Methods** Systematic literature searches involved electronic keyword search of the following 8 databases, via EBSCOhost: MEDLINE; Science Citation Index; Science Direct; CINAHL Plus; Social Sciences Citation Index; APA PsychInfo; SPORTSDiscus; and Educational Resource Information Center. Cohen *d* was calculated as an effect size for treatment effect, using the standardized difference between intervention group's body mass index (BMI) change and control group's BMI change.

**Results** The final sample included 19 intervention studies with 2,140 Korean children and adolescents (mean age, 12.2 years). Overall, interventions were strongly favored over their controls ( $d = 1.61$ ; 95% CI, 1.12–2.09). Sex, age, baseline weight category, and intervention durations did not significantly affect BMI outcomes, while interventions that included at least one physical activity component ( $d = 2.43$ ; 95% CI, 1.63–3.24) were significantly better than those that did not ( $d = 0.02$ ; 95% CI, -0.26 to 0.31).

**Conclusions/Implications** Type of intervention component appeared important, though no differential association was observed by sex, age, baseline weight category, intervention duration, and number of intervention components. This meta-analysis provides valuable clinical insights into the use of research information and the clinical practice guideline for treating pediatric obesity in Korea.

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**Keywords:** Meta-Analysis, Korean Obesity Interventions, Research Information via EBSCOhost

# Improving Transparency in Caring for Psychiatric Involuntary Hold Patients

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**Background/Significance** Mental healthcare is a trending topic recently discussed with issues like mass shootings, COVID pandemic, and insufficient resources.<sup>1</sup> Psychiatric hold laws allow for the involuntary admission of patients with mental illnesses. One hospital had a process in place to identify patients on various kinds of Involuntary Holds (IH) in order to help keep them safe. However, the organization did not have a process to distinguish court committed IH patients who may be compelled to receive medications. Nurses identified patients on court commitments via verbal communication, provider notes and reviewing paper charts. Due to the lack of transparency in the EHR, the court commitment was not easily identified. Safety events were noted related to staff miscommunicating the court-ordered psychoactive medications, resulting in patients not receiving appropriate treatment. If patients do not receive appropriate care, they could be re-hospitalized or have an increased length of stay.<sup>2</sup>

**Purpose** This project aimed to bring transparency to the EHR to improve the patient outcome and length of stay.

**Methods** To address this issue an interdisciplinary group was formed and determined to use the EHR to identify these patients more clearly. EHR changes made: Court commitment order, flag, bright colored banners with education link, colored text on MAR, clinical decision support, Order-Based System List and Patient List Columns to track patients, rules to drop off orders/flags post-discharge, After Visit Summary hard stops to prevent discharge until psychiatry clearance.

**Results** Preliminary data shows a downward trend in the patient population's length of stay and a decrease in the number of patient medication refusals indicating the new order improved situational awareness.

**Conclusions/Implications** The implementation of the hospital's innovative new orders benefited multiple disciplines. Staff is now effortlessly able to identify these high-risk patients. The improved efficiency in EHR communications allowed nursing to provide timely administration of court-ordered psychoactive medications and therefore permitted consistent adherence to the patient's treatment plan. Consequently, this helped to decrease length of stay, improve patient outcomes and provided the ability to treat more patients seeking mental healthcare.

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**Keywords:** Involuntary Hold, Court Commitment, Length of Stay

# Discovering Insights in Disaster Informatics Research Before and During the Pandemic

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**Background/Significance** The pandemic has brought along devastating impacts on human lives,<sup>1,2</sup> the economy,<sup>3,4</sup> and social development.<sup>5,6</sup> Numerous studies have investigated the pandemic impacts;<sup>1-6</sup> however, its impacts on the disaster informatics literature have not yet been uncovered.

**Purpose** This study aims to describe trends in the disaster informatics literature pre-pandemic (2016-2019) and post-pandemic (2020-September 2022).

**Methods** The disaster informatics literature was collected from three databases: Scopus, PubMed Central, and Web of Science using three keywords: “disaster informatics”, “pandemic crisis” and “crisis informatics.” A descriptive analysis was conducted to extract valuable insights into the publication patterns and VOSViewer<sup>7</sup> (a bibliometric analysis tool) was used to investigate the collaborative research patterns among authors, institutions, and countries. Yake’s<sup>8</sup> unsupervised machine learning model was utilized to extract relevant keywords from the retrieved abstracts and titles. The final dataset comprised 149 publications written in English from the pre-pandemic period and 6675 written in English and 19 other languages from the post-pandemic period.

**Results** The pandemic has positively impacted the literature progress and collaborative patterns. The drastic increase in the number of publications in diverse languages is evidence of the growing global interest in disaster informatics among researchers. An increased number of disaster informatics literature is observed in the countries mostly impacted by the pandemic. After the pandemic, the collaborative research trend is observed to be expanding with more collaborations happening across the globe. Before the pandemic, the literature’s focus was on disaster measures, management, communication, and responses, whereas after the pandemic, its focus was on COVID-19 impacts, healthcare, education, supply chain, and public policies.

**Conclusions/Implications** Our preliminary results are proof that the pandemic has positively influenced the disaster informatics literature by attracting international researchers’ attention, fostering more collaborative work, and expanding research topics. The pandemic has also emphasized the importance of disaster informatics research through an increase in publications with more diverse and extensive collaboration networks of authors, institutions, and countries. The publishing trends along with the shifts in research topics are valuable insights to health informatics researchers in a way that can foster more collaborations and create a potential for new discoveries.

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**Keywords:** Disaster Informatics, Pandemic Crisis, Bibliometric Study

# Algorithm-Based CHW Public Health Emergency Preparedness for Older Adults

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**Background/Significance** Our population is aging. The Age Friendly Health System (AFHS) initiative by the Institute of Healthcare Improvement includes 4 M's (What Matters, Mentation, Medication & Mobility) setting exemplars for older adult healthcare.<sup>1</sup> When applying the 4M's to emergency medical services (EMS), the benefits include avoiding unnecessary transports and helping older adults stay healthy and safe in their home.<sup>2</sup> In public health emergencies, the ability to stay healthy and safe becomes more imperative.

**Purpose** Community Health Workers (CHWs) may serve as a critical resource supporting health literacy for underserved communities helping reduce harm, improve access, care seeking and connecting resources in a time of massive disruption<sup>3</sup>. Although the potential role of CHWs in pandemics<sup>4,5</sup> and other public health emergencies has been recognized, they have been underutilized<sup>6</sup> especially for underserved communities. This project purposed building capacity of CHWs to serve vulnerable older adults in public health emergencies.

**Methods** Using the AFHS components embedded into an electronic medical record (EMR) algorithm, zip code-based heat maps were developed of vulnerable older adults in Tarrant County, Texas. Additionally, zip code maps of existing CHWs were overlaid to identify gaps and opportunities in the availability of these frontline helpers. New CHW candidates recruited and certified and existing CHWs will receive Emergency Preparedness Response (EPR) training to improve the health service support and health literacy of this vulnerable population and thus, potentially improve outcomes in public health and other emergent situations.

**Results** The preliminary results indicated large gaps in 13 zip codes and moderate gaps in 27 additional compared to HRSA defined targets<sup>7</sup>. Thus, over a third of zip codes (37%) lack CHW support during public health emergencies compared to location of vulnerable older adult populations. Using healthcare informatics, these identified areas helped recruit and train CHWs in emergency response and older adult care to assist EMS during public health emergencies.

**Conclusions/Implications** Implementing health informatics to identify needs of target populations allows for better care delivery and outcomes when navigating public health emergencies. Using data to prepare in advance can better support vulnerable populations such as older adults by targeting and training CHWs to assist.

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**Keywords:** Community Health Workers, Health Literacy, Older Adults, Emergency Management, Informatics

# Explore Resources to Decrease Hospital Readmissions for the Elderly with Type II Diabetes Mellitus Resulting from Malnutrition

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**Background/Significance** Type 2 Diabetes Mellitus (T2DM) individuals with complications often lead to hospitalizations. Twenty-four percent of the 30-day readmission rate was found in T2DM older adults.<sup>1,2</sup> Thirty-nine percent of hospitalized patients with T2DM were at risk of malnutrition, while the rate of malnutrition was at 25%. T2DM individuals have a 1.4-fold higher risk of malnutrition. Geriatric patients with T2DM and malnutrition were at the rate of 21.2%, regardless of BMI.<sup>3</sup>

**Purpose** This paper aims to explore resources to decrease hospital readmissions for the elderly with T2DM resulting from malnutrition.

**Methods** With the data from Texas Care Information Collection of DFW Hospital Council,<sup>4</sup> inpatients aged 65 to 90 years with the primary diagnosis of T2DM with or without complications in the year 2021 and those with mild to severe protein energy malnutrition between the year 2020 to 2021 were analyzed using the Qlikview.<sup>5</sup> Descriptive statistics information, such as malnourished population density per zip code and malnourished patients per race, gender, age group and DRG code, were illustrated in the Tableau Dashboard Geo Map.<sup>6</sup> Alteryx analytic platform illustrated predictive analysis on T2DM older adults with or without complications.<sup>7</sup> Tableau was used to predict hospital readmissions by aligning the average length of stay with admit source, discharge status, and principal discharge description.<sup>6</sup>

**Results** T2DM and malnutrition primarily affected 65-90 years old adults mostly discharged to home/self-care/home health services/skilled nursing facilities (SNF). Seventeen North Texas counties with the most malnourished population required hospitalizations. T2DM elderly with complications (i.e. skin ulcer), 75-79 years old adults, admitted from SNF and discharged to inpatient acute care or to the community outpatient services have the highest possibility of hospital readmissions.

**Conclusions/Implications** Stakeholders should develop an effective transitions of care program with multi-interdisciplinary approaches for post-hospital discharge care (e.g. addressing social determinants of health needs, involving dietitians for interventions) to initiate tools for early malnutrition screening during inpatient hospital stay and post-discharge outpatient care.

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**Keywords:** Malnutrition, Prevention, Social Determinants of Health

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*Thank You!*