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eMOLST and Electronic Health Records

By Patricia A. Bomba and Katie Orem

Introduction

This article reviews the development and current state of the electronic Medical Orders for Life-Sustaining Treatment (eMOLST) and the future vision of a statewide registry as the optimal solution for New York State. The key quality and patient safety elements of the eMOLST application seamlessly integrate the clinical process, including a discussion on goals for care, with the legal requirements under New York State Public Health Law and Family Health Care Decisions Act. The eMOLST provides a system-based solution for health systems and the community that ensures accessibility of the eMOLST form, and improves provider training and satisfaction, as well as clinical and legal outcomes. Recommendations are made for statewide development and implementation of the eMOLST Program. The ultimate goal is to ensure patient preferences for care are honored at the end of life.

Summary

Honoring patient preferences is a critical element in providing quality end-of-life care. Medical Orders for Life-Sustaining Treatment (MOLST) is a program designed to improve the quality of care seriously ill patients receive at the end of life by translating patient goals for care and preferences into medical orders. MOLST is based on effective communication between the patient, his or her health care agent or other designated surrogate decision-maker, and health care professionals that ensures shared, informed medical decision-making. The process results in documentation of medical orders on a bright pink form that health care professionals must follow. MOLST is a standardized community-wide form that transitions with patients across all care settings.

As a result of a New York State Department of Health (NYSDOH) HEAL 5 (Health Care Efficiency and Affordability Law) grant, a secure web-based eMOLST application was developed. The eMOLST application documents the clinical process, including a discussion on goals for care, with the legal requirements under New York State Public Health Law (NYSPHL). The eMOLST application streamlines the workflow to complete the requirements for a legal medical order with automated user feedback for quality review, notification of missing information, and training tools for users.

The eMOLST application will render an electronic version of the current paper-based NYSDOH-5003 MOLST Form and the appropriate MOLST Chart Documentation Form for adults or minors along with the Office for Persons with Developmental Disabilities (OPWDD) checklist for developmentally disabled individuals without medical decision-making capacity. These forms are made available to providers through the Rochester Regional Health Information Organization (RHIO). The role of RHIOs in New York State is to transfer health information across clinical care settings and incorporate patient-driven data in a Health Information Exchange (HIE). Multiple RHIOs across New York will connect to each other through a network called SHIN-NY. The Rochester RHIO plans to attach signed eMOLST forms to its XDS.b document registry.

In keeping with New York State's vision for open-system solutions, the eMOLST application is being developed following open architectural principles for the benefit of the community and other RHIOs across the state. The long-term vision of this project is to build a New York State eMOLST registry by leveraging the SHIN-NY network and serve as a model for the nation.

To clarify, eMOLST is an electronic MOLST form that can be completed on a computer, printed for a patient, stored in an electronic medical record (EMR) and transmitted to a registry of forms. A MOLST Registry is an electronic database centrally housing MOLST forms to allow 24/7 access in an emergency. In New York, our eMOLST application combines both the MOLST process with form completion while also housing the New York State eMOLST Registry. Learn more on nysemolstregistry.org/.

By moving the MOLST form to a readily accessible electronic format, health care providers, including emergency medical services (EMS), will have access to MOLST forms at all sites of care including hospitals, nursing homes and the community. This approach will allow for EMS to view the eMOLST form in the event of an emergency and will allow other systems to view the form at the time of need, as the document is shared across the care continuum.

In summary, in terms of MOLST form creation, validation and generation, eMOLST is the optimal solution to assist providers in having the MOLST discussion, documenting the clinical steps and fulfilling legal requirements under NYSPHL. The inherent quality assurance and interoperability features of eMOLST reduce overall liability and risk.

History of MOLST and eMOLST in New York State

MOLST Program

The MOLST Program began with creation of the original MOLST form in November 2003. MOLST, adapted from Oregon's Physician Orders for Life-Sustaining

Treatment (POLST), combines resuscitation instructions and other life-sustaining treatment while complying with NYSPHL.[1] Regional adoption and collaboration with NYSDOH began simultaneously in March 2004. A revised form consistent with New York State law was approved by the DOH for use as an institutional DNR in *all* health care facilities throughout New York State in October 2005[2] and the 8-Step MOLST Protocol was introduced to standardize the MOLST process.

With passage of the MOLST Pilot Project Legislation (2005)[3] and Chapter Amendment (2006),[4] MOLST was approved for use as a Nonhospital Do Not Resuscitate (DNR) and Do Not Intubate (DNI) form in the community in Monroe and Onondaga counties. After a successful three-year MOLST Pilot Project, Governor David Paterson signed Section 2977(13) into NYSPHL in 2008. This law authorized the use of MOLST as an alternative form for issuing a nonhospital order not to resuscitate (in place of the standard form) and for issuing a non-hospital do not intubate order, thereby, changing the scope of practice for EMS across New York State.[5]

In March 2010, a seventeen-year effort to enact legislation that would improve end-of-life decision options culminated in the passage and signing of the Family Health Care Decisions Act (FHCDA), a New York State law that enables a patient's family member to make health care decisions when the patient is not able to do so.[6] The key provisions of FHCDA became effective on June 1, 2010.[7] NYSPHL section 2977(13) was repealed and a new NYSPHL, Article 29-CCC, was created to govern Nonhospital DNR Orders, including the MOLST.[8] The NYSDOH also revised the MOLST form (DOH-5003) in June 2010 to make it more user-friendly and to align the form with the procedures and decision-making standards set forth in FHCDA.[9]

FHCDA was followed by the enactment of the Palliative Care Information Act (PCIA)[10] and the Palliative Care Access Act (PCAA) in 2011. Under the PCIA, an attending health care practitioner must *offer* to provide information and counseling about palliative care to patients with a terminal condition, including the range of options appropriate to the patient, prognosis, risks and benefits of various options, and the patient's "legal rights to comprehensive pain and symptom management at the end of life."

The PCAA obliges hospitals, nursing homes, home care agencies as well as enhanced and special needs assisted living residences to establish policies and procedures regarding palliative care, including access to information and counseling and facilitating access to appropriate palliative care consultations and services.[11] Passage of the PCIA and PCAA will ensure that patients and loved ones will be provided with information on the key pillars of palliative care: advance care planning, pain and symptom management, and caregiver support. Decisions regarding hospice care, including the withdrawal or withholding of life-sustaining treatment, under FHCDA became effective September 19, 2011.[12]

Advance care planning, including having a patient-centered discussion on goals for care where MOLST completion is one element, is a key pillar of palliative care and assists providers and health care facilities meet the new legal requirements of the PCIA and the PCAA.

eMOLST

A NYSDOH HEAL 5 grant was awarded to the Rochester RHIO in 2008. Included in the HEAL 5 grant was funding to initiate a New York State Registry for advance directives and MOLST forms.

When work began, paper MOLST forms had to be accompanied by supplemental forms (one for adults without capacity and another for minor patients) to support documentation of the process and fulfill legal requirements. The MOLST process was used in hospitals, nursing homes, assisted living facilities and hospices as well as by physicians in the community. Many hospitals and nursing homes were already scanning paper MOLST forms and attaching them to a patient's electronic health record (EHR), but this information was not easily available outside of their institution and did not eliminate the potential for incompatible medical orders on the MOLST form.

The core value of making the MOLST form available to the RHIO (and thereby the HIE) is that the HIE can make MOLST orders available to other providers and institutions at the point of care—thus ensuring that a patient's wishes about end-of-life treatment are honored. As a NYDOH-funded service through the HEAL 5 grant, the intention was to create an electronic version of the MOLST application that can be queried by any number of other HIEs or other clinical systems.

A major goal of the project was to ensure broad acceptance. Thus, the application would need to be developed in such a way that the barriers to adoption were minimized and the application best fit institutional workflows, while balancing data requirements and business logic in keeping with the MOLST program and legal requirements under NYSPHL.

A range of approaches were initially considered including scanning MOLST forms in with or without Optical Character Recognition (OCR). Another approach considered was the creation of the MOLST form as an electronic web-based data collection form with more error checking and logic prompts to better ensure data quality

and compliance. As part of the early analysis and design, the various solutions were reviewed in terms of the functions required to support the approach, as well as the positive and negative aspects of each approach and their likely adoption rates. In addition, the potential solutions were presented to representative institutions for feedback and to help finalize the initial direction of the project.

Development of eMOLST, a secure web-based application with automated workflow, emerged as the optimal community solution with three major goals:

- *Assure Accessibility*—An electronic registry is created in the Rochester community. The long-term vision of this project is to build a New York State eMOLST registry by leveraging interoperability between New York State RHIOs using the SHIN-NY network.
- *Improve Quality Assurance*—There are built-in quality controls to ensure accuracy of form completion. It is designed to streamline the workflow around completing the information for a legal medical order with automated user feedback for quality review, notification of missing information and training tools for users. The electronic version of the MOLST form is legible. Incompatible orders are eliminated; for example, both "Cardiopulmonary Resuscitation" and "Do Not Intubate" cannot both be chosen on an eMOLST form as this combination of orders is clinically impossible. Similarly, both "Cardiopulmonary Resuscitation" and "Comfort Measures Only" cannot be chosen.
- *Build Quality Metrics*—Integration of outcome measurement and trend reporting is available.

With passage of the Family Health Care Decisions Act, the legal requirements changed effective June 1, 2010 and the supplemental MOLST forms became obsolete. A public eMOLST Preview was held on October 19, 2010. As a result of site visits with providers in early 2011, additional functionality was built into the application to integrate the clinical steps, legal requirements, and documentation of the discussion.

eMOLST Application Functions

The eMOLST application allows authorized health care professionals to access the system and create, review and renew, update and view patients' eMOLST forms. Physicians can electronically sign the form. The details and security of eSignatures will be addressed later in this article. All consents obtained when completing an eMOLST are verbal, unless a paper-to-eMOLST conversion is taking place, in which case the original consents can be documented, unless new consents are obtained. Users can keep track of eMOLST forms completed for their patients, and receive messages about which patients are ready for review and renewal or updates to MOLST orders.

A PDF version of the form will be available to print when the provider finishes entering information and should be printed on bright pink paper for the patient. In the Rochester RHIO area the PDF will be sent to and viewable through the Rochester RHIO's XDS.b document registry and will eventually be exchanged with other RHIOs in New York State via the SHIN-NY network.

The eMOLST application supports the completion of Chart Documentation Forms that align with the NYSDOH Legal Requirements Checklists for Adult and Minor Patients and the OPWDD checklist for individuals with developmental disabilities who lack medical decision-making capacity. A PDF will be generated for the OPWDD Checklist that MUST be attached to the MOLST form. PDFs will also be generated for the Chart Documentation Forms for inclusion in the medical record.

The eMOLST application renders in iOS Safari as well as all Android-based browser options on the market, making eMOLST tablet-friendly. Furthermore, a simplified eMOLST mobile application is in development and will be available for iPhones and Android phones. Unfortunately due to technical limitations, BlackBerry devices are not supported.

eMOLST Training Tools

In order for eMOLST to sustainably grow across New York State, training tools were developed to ensure that users can quickly and easily understand the application. There are two primary eMOLST training tools for clinical users of the eMOLST application: eLearnings and the eMOLST Manual for Clinicians.

eLearnings are available through the "Tutorials" link listed on every page in the eMOLST application. This link redirects users to the CompassionAndSupport.org eMOLST web page. This eMOLST page is also directly available through the MOLST Training Center on CompassionAndSupport.org. The eLearnings walk users through the process of understanding eMOLST, section by section. Most eLearnings are approximately one or two minutes long and address specific issues, such as completing the Discussion section, or how to convert paper MOLST forms to eMOLST. The eLearnings show users the necessary eMOLST screens for the topic discussed and show exactly where users need to click to appropriately complete the eMOLST process. Voiceovers in the eLearnings provide instruction throughout the short videos.

Another component of eMOLST training is the eMOLST Manual for Clinicians. This is a pdf document that can be easily accessed from a link in the eMOLST

application and eMOLST web page on CompassionAndSupport.org. During the initial eMOLST launch trainers noted that certain users who were less accustomed to digital form completion were also not as comfortable with watching an eLearning video and then following the same steps in the application. These users preferred something tangible and written that they could print and follow until they used the eMOLST application regularly and became more comfortable. As a result of this user feedback, an eMOLST Manual for Clinicians was developed. The content of the eLearnings and the eMOLST Manual for Clinicians is identical; however, the preferred methods for learning how to use eMOLST varied, so both were developed to meet the different needs of different users.

The addition of eLearnings and the eMOLST Manual for Clinicians to the eMOLST application are critical parts to ensure that eMOLST growth across New York State is scalable and sustainable. The presence of these web-accessible training tools ensures that clinicians from across the state can learn to use eMOLST without an official training session held by someone who already knows how to use the application. Instead, users can explore the application themselves and learn as they go. For example, a user could watch the eLearning on completing the Discussion section of the eMOLST form and then go on to complete that section with a patient. Or, if a clinician prefers, he or she can have the eMOLST Manual for Clinicians in-hand as he or she works in the eMOLST application. Both the eLearnings and the eMOLST Manual for Clinicians are also especially helpful for users who have not been active in the application recently and need a quick refresher on how to appropriately complete a certain part of the eMOLST process.

Security, Privacy and Confidentiality

eMOLST is a web-based application, securely served over an HTTPS://connection. Currently, the eMOLST application is hosted in a physically secure datacenter maintained by Excellus BlueCross BlueShield. The database holds data at rest in an encrypted format. Any links between patient identifiers and patient data are also encrypted.

The database and application are two distinctly separate entities. This means no data may be decrypted directly from the database without the application. The decryption keys are stored in the application, and data cannot be decrypted from the database without it.

Access and information transmitted through the eMOLST application and the Rochester RHIO comply with HIPAA, NYSDOH privacy rules and NYSPHL.

eSignature

Physicians can electronically sign the form. An e-signature, as defined by the U.S. Commerce ESIGN Act, is "an electronic sound, symbol, or process, attached to or logically associated with a contract or other record and executed or adopted by a person with the intent to sign the record." An e-signed document "may not be denied legal effect, validity, or enforceability solely because it is in electronic form." Examples of e-signature technologies and processes include:

- Entering a PIN at an ATM, or using a PIN to sign online forms such as the Free Application for Federal Student Aid (FAFSA);
- Using an electronic tablet to sign a credit card receipt; and
- "Clickwrap" (clicking a button indicating acceptance of a license agreement before installing software, etc.).

The design for e-signatures in eMOLST features:

- User authentication methods and a closed, trusted user registration model;
- Additional authentication before signing the form;
- A "clickwrap" method to indicate user intent and acceptance when making the signature;
- Embedding signature artifacts in the final digital/printed form;
- Graphical renderings of signatures embedded and watermarked in the final form;
- Detailed audit logs recording the form discussion, completion, and signing;
- The ability to cross-reference the completed form in multiple formats and repositories;
- Standards and processes to ensure EMS and other practitioners can easily recognize and trust a valid MOLST form produced by the eMOLST system.

A multi-variable re-authentication method minimizes cost and risk by integrating processes and software, preventing errors, and standardizing results. This approach is also scalable and sustainable by following proven deployment models and allowing a standardized e-signature approach for eMOLST statewide.

eMOLST Analytics, Data and Opportunities for Future Research

There is a specific Analytics function developed in the eMOLST application. The Analytics section allows users

to view sections of completed eMOLSTs in aggregate. For example, if there are 100 patients with eMOLSTs at a facility and 90 patients chose DNR it would be easy to see that in the Analytics section. Users cannot see who those 90 patients are, though, as the data is de-identified and aggregated. The Analytics function will be useful to identify trends or correlations between different elements on the eMOLST form. For example, users might want to know whether their patients' choices regarding resuscitation instructions and life-sustaining treatment correlate well with goals for care, prognosis and/or functional status. Additionally, a health system may wish to identify whether MOLST forms are being created primarily in the hospital, the nursing home or the community, and who is making the decisions (patient, health care agent, public health law surrogate, minor's parent/guardian or §1750-b surrogate.) These questions, in addition to many others, can be answered using the eMOLST Analytics function. Targeted educational interventions can be designed and implemented.

The Analytics function is also helpful for facilities that want to look at eMOLST from a quality assurance (QA) or quality improvement (QI) perspective. If the person who does QA/QI activities at a particular facility is not involved with patient care then a special profile can be set up in the eMOLST application which will prevent that person from accessing identifiable HIPAA-covered data, while still allowing them to access necessary information about eMOLST form completion for their facility's patients.

Much of the data that will be aggregated in the eMOLST application's Analytics section is not currently available without doing time-intensive individual chart reviews. Making this de-identified information easily accessible will help facilities improve the quality of care their patients receive. Moreover, facilities will be able to easily access this data for submission for Joint Commission Advanced Certification in Palliative Care. In the future, Institutional Review Board (IRB) approval will be sought to answer broader research questions about end-of-life decision-making.

Interoperability Requirements

For participating entities using an EHR or Electronic Medical Record (EMR) system, interoperability is required to ensure that patient wishes are honored, and that there is no loss in transition of care. A direct, interoperable connection between the EHR/EMR and eMOLST fulfills this requirement and supports the goals of the MOLST program.

Examples of interoperability include:

1. Single Sign On (SSO) between the EMR and eMOLST to ensure an uninterrupted electronic workflow.
2. Scan/Attach of printed eMOLST documents into the patient record in the EHR/EMR to ensure accessibility at the time of need.
3. Querying the Rochester RHIO to obtain current copies of eMOLST documents from the XDS.b document registry.

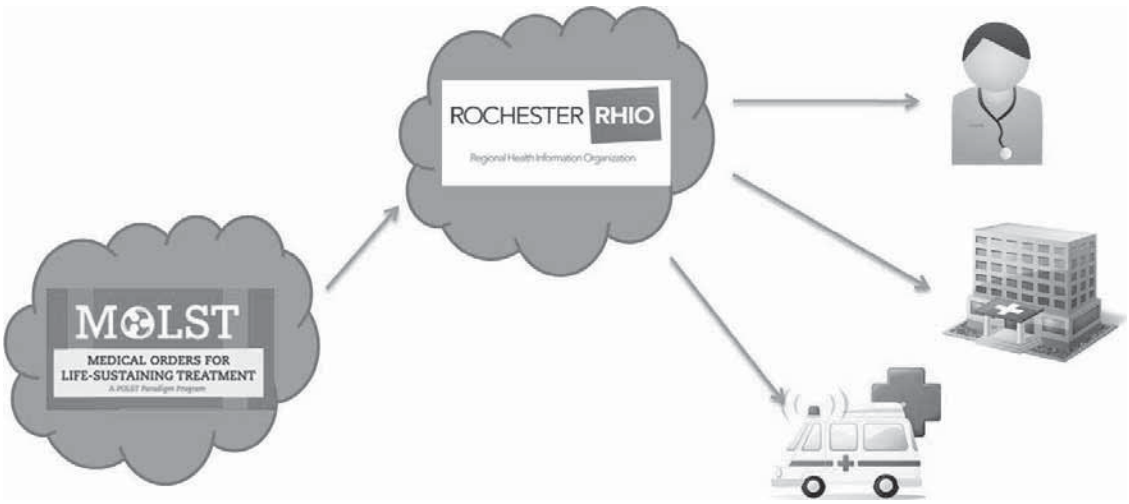
The EMR system should have the ability to rapidly receive and accurately store and display the external MOLST forms within that patient's EMR. MOLST forms should be stored in a unique MOLST field or tab that can be accessed instantly, and preferably within one click. The tab can be marked with a yes/no box, so that the provider can see if a form exists before opening the tab. The unique MOLST file within the inpatient and outpatient EMR should only contain MOLST medical orders.

Next Steps for eMOLST

Currently we are between phases one and two of the eMOLST Community Deployment steps described below.

- *Phase One*—Deploy eMOLST without Rochester RHIO integration.
- *Phase Two*—Deploy eMOLST with Rochester RHIO integration.
- *Phase Three*—Exchange and view eMOLST forms through the Rochester RHIO and integrated systems, including EMS.
- *Phase Four*—Replicate steps one through three with other RHIO Service Areas across New York State.
- *Phase Five*—Leverage New York State's SHIN-NY network of RHIOs to transmit eMOLST forms across the state.

In regard to form creation, validation and generation, eMOLST is the best solution to assist providers in the discussion, documentation of clinical steps and legal requirements under NYSPHL. At the end of the process, an electronic DOH-5003 MOLST form and a MOLST Chart Documentation Form for adult and minor patients and OPWDD checklist for individuals with developmental disabilities who lack medical decision-making capacity are created. The inherent quality assurance and interoperability features of eMOLST reduce overall liability and risk. Systems which generate MOLST forms electronically within a third-party system are NOT endorsed and should not be used.



Why Do eMOLST?

Improves Quality Outcomes

- *Safe* – built-in quality controls for correct orders; does not allow for incongruous medical orders
- *Effective* – enables providers to follow clinical steps and meet legal requirements
- *Patient-centered* - goals for care guide choice of interventions
- *Timely* – web-based; assures accessibility across care transitions, including documentation of discussion
- *Efficient* – more time for discussion; less time for documentation, while ensuring accuracy
- *Equitable* –integrates needs of adults, minors, developmentally disabled who lack medical decision-making capacity; can be used in all clinical care settings

Improves Legal Outcomes

- Improves compliance with NYS Public Health Law (FHCDA, §1750-b)
- Ensures accurate documentation
- Reduces potential liability
- Reduces potential for DOH deficiencies

Improves Provider Satisfaction

- Easy to learn, easy to use
- DOH-approved process for conversion of paper MOLST to eMOLST
- Creates MOLST and MOLST Chart Documentation Form
- Helps providers learn complexities of NYSPHL
- Tracks when "Review and Renewal" is needed
- Opportunity to link eMOLST training and training for enhanced reimbursement model for thoughtful MOLST discussions

Provides System-based Solution for Health Systems

- Improves compliance of FHCDA, PCIA, PCAA
- Quality Assurance/Quality Improvement – members can access Analytics
  - Integrates outcome measurement and trend reporting
  - Allows access to aggregate de-identified data analysis
  - Data can be used for Joint Commission Advanced Certification in Palliative Care
- Information Technology
  - Can be used with/without EHR and conversion
  - Web-based solution
- Improve financial outcomes
  - Meets CMS requirements for reimbursement
  - Tracks time spent and elements required for enhanced reimbursement model for thoughtful MOLST discussion

Endnotes

1. Bomba, P.A., *Landmark Legislation in New York Affirms Benefits of a Two-Step Approach to Advance Care Planning Including MOLST: A Model of Shared, Informed Medical Decision-Making and Honoring Patient Preferences for Care at the End of Life*. Widener Law Review, 2011, Volume XVII Issue 2, 475-500.
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3. *Legislation*, COMPASSION AND SUPPORT AT THE END OF LIFE, http://www.compassionandsupport.org/index.php/legislation (last visited March 1, 2012).
4. *Id.*
5. *Id.*
6. N.Y. PUB. HEALTH LAW § 2994-d.
7. *Id.*
8. N.Y. PUB. HEALTH LAW § 2994-dd(6).
9. *Medical Orders for Life-Sustaining Treatment (MOLST)*, N.Y. ST. DEP'T OF HEALTH, http://www.nyhealth.gov/professionals/patients/patient_rights/molst/ (last visited March 1, 2012).
10. N.Y. PUB. HEALTH LAW § 2997-c.
11. N.Y. PUB. HEALTH LAW § 2997-d.
12. N.Y. PUB. HEALTH LAW § 2994-a Subdivision 5-a and 17-a.

Patricia Bomba, MD, FACP, Vice President and Medical Director, Geriatrics, Excellus BlueCross BlueShield is a nationally recognized advance care planning and palliative care expert who has led development of a two-step approach to advance care planning: Community Conversations on Compassionate Care and Medical Orders for Life-Sustaining Treatment program detailed on the community website, CompassionAndSupport.org. Her collaborative work with NYSDOH on health policy and legislative advocacy established MOLST as a statewide program. Currently, she chairs the MOLST Statewide Implementation Team and the National Healthcare Decisions Day New York State Coalition, serves as the eMOLST Program Director, is New York State's representative on the National POLST Paradigm Task Force, and is a member of the Medical Society of the State of New York Ethics Committee. She is a member of the American Board of Internal Medicine Committee developing the Primary Palliative Care Performance Improvement Module and served as a member of the Review Committee of the National Quality Forum's *Framework and Preferred Practices for a Palliative and Hospice Care Quality* project.

Katie Orem, MPH, is the Geriatrics & Palliative Care Program Manager and eMOLST Administrator at Excellus BlueCross BlueShield. She supports the evaluation and expansion of Geriatric, Palliative Care and End-of-Life Care (EOLC) initiatives internally, across New York State and nationally, through collection of and analysis of outcomes. Katie initially worked at Excellus BlueCross Blue Shield as a Summer College Intern. Subsequently as a Project Analyst in the Geriatrics Department, she supported creation of the HEAL 5 grant that resulted in the eMOLST project with an ultimate goal of creating a New York State registry of advance directives and MOLST forms.