One promising initiative called ECHO-AGE is being piloted at Boston's Beth Israel Deaconess Medical Center. The initiative is based on the highly successful ECHO project piloted in New Mexico, which used Skype technology to educate rural physicians about the management of hepatitis C. ECHO has significantly reduced the morbidity and costs associated with this disease in numerous underserved areas.[96] In similar fashion, ECHO-AGE will educate NH/SNF physicians and nurses about the management of geriatric conditions common in NHs. Rural NH/SNF physicians will present cases to academic geriatricians on a weekly basis over the Internet, enabling them to access expert opinions from a distance. As these NH/SNF physicians and nurses become experts in geriatric care, they will serve as local resources for other physicians in their local area.

Other efforts have focused on improving prescribing practices in LTCFs. Several guidelines to reduce antibiotic resistance in health care settings, including LTCFs, have been published.[97, 98, 99,100] Even though antimicrobial stewardship is acknowledged as being a component of the LTCF infection control program,[101,102] as stated above, implementing antimicrobial stewardship programs in LTCFs involves many challenges. To address these challenges, educational materials and guidance have been developed to aid the implementation of antimicrobial stewardship programs in LTCFs. For example, collaboration among the Michigan Antibiotic Resistance Reduction Coalition (MARR), Michigan Department of Community Health, Michigan Society for Infection Prevention and Control, and CDC resulted in a toolkit designed to help LTCFs implement "12 Steps to Prevent Antimicrobial Resistance Among Long-Term Care Residents."[103] Recently, an antimicrobial stewardship program toolkit was developed through a collaboration between the Greater New York Hospital Association and the New York State Department of Health that included both acute care hospitals and LTCFs.[104]

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[100] APIC Guide 2010. Guide to the Elimination of Multidrug-resistant *Acinetobacter baumannii* Transmission in Healthcare Settings.

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[102] Smith et al. Antibiotic Stewardship Programs in Long-Term Care Facilities *Annals of Long-Term Care: Clinical Care and Aging*. 2011; 19[4]:20-25.

[103] MARR (Michigan Antibiotic resistance Reduction Coalition). Long-term Care Tool Kit. 12 Steps to Prevent Antimicrobial Resistance Among Long-Term Care Residents.

[104] GNYHA Antimicrobial Stewardship Project.

E. State Financial Incentives

Recently, CDC outlined a number of state financial practices intended to support HAI education and surveillance activities within hospitals. Some of these endeavors could be tailored or extended to the long-term care context:

- Nevada used funds from penalties gathered from hospital facilities that fail to comply with various state HAI guidelines to support HAI education and training in hospitals.
- New Hampshire created a hospital fee mechanism to pay for its HAI program, which started in July 2011.
- Washington passed legislation to create a hospital infection control grant account for infection control and surveillance programs.

VII. Federal Regulatory Oversight and Performance Incentive Programs in NHs/SNFs

A. Federal Regulatory Oversight

The Division of Nursing Homes (DNH) in the Survey and Certification Group at CMS is working on multiple projects as part of its ongoing efforts to reduce the rate of HAIs in NHs. These projects include enhancing the data analysis of both facility deficiency data and the clinical data from the MDS and working with federal partners on studies to assess the practice of HAI prevention at the state level.

A key strength of the CMS Survey and Certification process is that the NH/SNF surveyors have an opportunity to assess the quality of NH/SNF ICP policies and practices on a regular basis. When deficiencies are found in an annual or complaint survey, the surveyor has the authority to cite the NH/SNF for that violation based on the federal regulation (F tag 441) directly related to ICP practices in NHs/SNFs.[105] The DNH continues to monitor trends in this deficiency for increased citation rates and to determine state-to-state variation in citations. Although higher citations may be related to an increased awareness of HAIs in NHs/SNFs, the DNH will monitor this area closely to proactively address HAI-related issues in NHs/SNFs before they become widespread or pose an immediate threat to the residents. The DNH is simultaneously improving its ability to analyze citation data by expanding the analyses to include the qualitative information captured in the surveyor's written documentation supporting a cited deficiency (CMS Form 2567). By looking at these data, the DNH will be able to analyze, among other things, the nature of the citations and the surveyors' sophistication when assessing a facility's infection control practices and procedures.

The DNH will also continue to publicly report on the MDS-based quality measures. The new measures based on the MDS 3.0 were released in 2012 and contain a wealth of information on HAI-related metrics, including UTIs, catheterization and vaccinations. Staff at the DNH will also look at data elements in the MDS related to infections, such as wound infections and MDROs.

[105] For further information see the CMS State Operations Manual,

As part the DNH's efforts to analyze staffing rates as they relate to NH/SNF care quality, the DNH is examining rates of avoidable hospitalizations from NHs/SNFs for a number of conditions, including sepsis, UTIs, and respiratory infections.

Additionally, the DNH worked with the CDC on a project to identify states' HAI initiatives. This work included an environmental scan of all state survey training coordinators and state HAI coordinators to determine the extent to which states are addressing HAI reduction in NHs/SNFs. This study also included an in-depth analysis of the more advanced state programs for HAI reduction. The end products of this study will provide a baseline for determining states' levels of readiness for addressing HAIs in NHs/SNFs, as well as valuable lessons for successful HAI reduction efforts that could be incorporated into NH/SNF surveyor training.

B. Performance Incentive Programs

Nursing facilities in the U.S. are heavily reliant on two public payers, Medicare and Medicaid, and these revenue streams account for a substantial portion of nursing facilities' operations. Nursing facilities, like other providers, could be responsive to payment incentives and, over time, might restructure care and delivery in response to those incentives. As a result, payment incentives could affect resident outcomes. Further, although there are no direct models to highlight, there are several promising practices that HHS should consider modifying or expanding to reduce HAIs in NHs/SNFs, including:

CMS's Nursing Home Value-Based Purchasing (NHVBP) Demonstration

Under the NHVBP, CMS provided financial incentives to NHs/SNFs that provide high-quality care or demonstrated improvements in care. Participating NHs/SNFs were assessed on various quality measures and then received payments based on performance. Although none of the quality metrics included in the demonstration explicitly focus on HAIs, two (urinary catheters left in the bladder and pressure ulcer incidence) at least indirectly related to HAIs. The NHVBP demonstration also tracked the participating facility's rate of resident transfers for specific conditions, such as UTI, sepsis, and respiratory infections, as an indicator of quality. It is worth exploring whether quality metrics within future NHVBP programs could be expanded to include HAIs of interest based on the results of this demonstration program.

Broader Application of the Hospital-Acquired Condition–Present on Admission Policy (HAC-POA) Policy

In 2007-2008, CMS launched the HAC-POA policy, which was applied to IPPS hospitals. This system could prove instructive when contemplating strategies for financially incentivizing HAI reductions in nursing facilities. CMS is examining the broader implementation of the HAC-POA system across settings that serve Medicare beneficiaries, including nursing facilities. States that adjust nursing facility payment rates based on case mix might have payment systems that lend themselves to a HAC-POA-type policy more easily (because more granular data are collected). In any case, more research would be needed to determine how or whether a HAC-POA policy would work in nursing facilities.

Improving Care Quality for Nursing Facility Residents

The CMS Medicare-Medicaid Coordination Office recently announced an effort to improve care for nursing facility residents. Although the program was launched only recently, interventions funded through this effort may directly or indirectly influence HAI prevalence in nursing facilities.

Pay for Performance

At the national level, beginning in 2012, CMS will track and impose financial penalties on hospitals with higher-than-average rates of readmission for particular conditions, some of which may align with HAI definitions. Some states have initiated a variety of pay-for-performance strategies in NHs/SNFs. For example, in Georgia, under the Nursing Home Quality Initiative, all NHs/SNFs are evaluated along a host of quality metrics, including prevalence of pressure ulcers among residents.

CMS's NH Quality Assessment and Performance Improvement Program

The Affordable Care Act requires all NHs to have a QAPI program in place by 2013. The program should effectively and continuously reevaluate the quality of the care each NH provides and quickly remedy any identified problems. CMS has embarked on a multiyear effort to provide the best tools and resources to help NHs implement their QAPI programs by undertaking three initiatives:

- **QAPI Tools and Resources:** In collaboration with CMS contractors, CMS is identifying and designing effective QAPI tools, templates, and resources for nursing homes.

- **Technical Assistance (TA):** CMS contractors will test QAPI tools, resources, and approaches to providing TA in a multiyear demonstration project with a small group of nursing homes. These tools and resources will be made available to all NHs following testing.

- **The Nursing Home Quality Improvement Questionnaire:** A questionnaire was designed to identify the quality systems and processes NHs currently have in place and to assess the extent to which these systems and processes function to help NHs recognize and address quality issues. CMS and its contractors will use this information to help refine the QAPI components.

NHs may find that enrolling in NHSN and other HAI prevention efforts offers a means of demonstrating their commitment to quality improvement, and HAI reduction initiatives can be built into a NH's QAPI plan.

VIII. COMMUNICATIONS AND OUTREACH TO THE LONG-TERM CARE COMMUNITY

A. Overview

The primary objective of the Communication Strategies Plan is to reduce HAIs in LTCFs by:

- Disseminating key messages about practices to prevent HAIs in long-term care residents
- Increasing knowledge and awareness of these key prevention practices among providers, consumers, and the general public

To prevent and reduce HAIs in LTCFs, key messages need to reach a variety of target audiences. HHS has implemented a number of ongoing quality- and health care-related initiatives, including the National Quality Strategy, Partnership for Patients, and the National Prevention Strategy Recommended actions in this section purposefully integrate messages across other HHS campaigns (and campaigns in which HHS is a partner) as appropriate.

- Existing campaigns that may provide opportunities for joint use of resources and messaging
- Target audiences
- A variety of methods for educating and communicating with these audiences

The messaging for the overall campaign should be appropriate to the level of the audience and use the principles of risk communication and social marketing. If used by HHS, all messages should have the appropriate level of agency clearance. Other messaging should be developed by HHS and be part of the public domain for shared use by professional groups and audiences. Regardless of the audience and communication technique, all involved HHS partners should focus on the same key messages to ensure consistency and produce an easily accessible and understood format for the respective target audience.

Consistent with the Outreach Plan for Phase One of the HAI Action Plan, the methods to target prevention of HAI in LTCFs will use various channels of communications and state-of-the-art best practices, including:

- Raising awareness of the importance of addressing HAIs in unique LTCFs
- Empowering consumers with the tools and knowledge to be effective self-advocates for HAI prevention
- Helping health care professionals focus their attention on preventive steps (including relevant CDC evidence-based guidelines) that will yield the greatest benefits
- Sharing the overall progress of the nation in reducing national rates of HAIs in LTCFs
- Promoting and sustaining heightened national attention to HAIs within the long-term care provider community by highlighting the HAI Action Plan and the progress that will be realized through the fulfillment of the plan
- Reshaping the social norms that affect HAIs so that HHS prevention measures become standard practice for both long-term care providers and consumers

For years, DNH has been analyzing a data file that links the resident-level MDS assessments with Medicare inpatient claims data to determine the rate of avoidable hospitalizations (including hospitalizations for UTIs and sepsis) as an outcome associated with understaffing. The Medicare Payment Advisory Commission has analyzed a similar file for its annual report to Congress on 30-day readmissions from SNFs. Key among the advantages of resident-level linked files is that there is no additional burden on providers.

Because this system places no additional burden on providers, it can be used in parallel with other surveillance systems, such as NHSN. Although NHSN will be an important tool for tracking the occurrence of all HAIs in NHs, CMS will be able to use this system to analyze claims and clinical data and identify HAIs that result in hospitalization. These efforts will align with other HHS initiatives to reduce readmissions and HACs, which include HAIs.

These data files need to be updated to link the data from the new MDS (Version 3.0). The DNH currently is working on the development of these datasets to continue refining NH/SNF staffing measures. Such files could provide this group and other stakeholders with a key tool for assessing the burden of HAIs in long-term care, allowing them to identify the most severe HAIs that require hospitalizations.

Additional insight may come from a small number of demonstration projects housed in the CMS Innovation Center and in collaboration with the CMS Medicare-Medicaid Coordination Office. The demonstration projects seek to implement interventions that reduce avoidable hospitalizations among long term care residents. Results from the projects are anticipated in late 2016.

Table 11. Summary of Recommendations

Subject Area		Recommendation
Research Gaps	1.1	Obtain more recent HAI incidence data for priority HAIs.
Data Sources and Measurements	2.1	Encourage HAI infection surveillance and reporting to NHSN as the industry norm. NHSN data collection and transfer should concurrently support surveillance and monitoring, quality measurement and reporting, and compliance monitoring.
	2.2	Consider integration of the AHRQ Common Formats project to encourage NHs to adopt and use health IT that complies with standards accepted by the Office of the National Coordinator for Health Information Technology.
	2.3	Place *prevention* as the highest priority for the UTI, CAUTI and CDI measurement set. Development of measures of catheter and antibiotic utilization should be encouraged in certified nursing facilities in a manner that is well aligned with the acute hospital to enable system-level measurement.
	2.4	Consider *transitional care* measures consistent with other current health system priorities, which may encourage patient- and episode-centered care and discourage cost-shifting. Measures of hospital admissions, readmissions, ED visits, and observation stays may be feasible to develop using ICD-9-CM and ICD-10-CM codes.
	2.5	Ensure that inclusion of additional measures is parsimonious and tailored to the quality improvement priorities of specific sites of care.

Subject Area		Recommendation
	2.6	Construct a data collection system that can support multiple components for assessing the quality of health care delivery, including disease surveillance, effectiveness of prevention and control activities, quality improvement, public reporting, and financial incentive determinations in long-term care.
HAI Prevention Promising Practices in LTCFs	3.1	Evaluate the use and success of the collaborative approach within regions or states to implement and perform HAI surveillance in NHs/SNFs. Use this information to determine how NH/SNF collaboratives should be designed, structured, and implemented to ensure they achieve their goals.
	3.2	Determine the feasibility of using a HAC policy in NHs/SNFs, and identify which HACs or HAIs are most relevant for NH/SNF providers.
	3.2	Consider implementing an assessment of current resources dedicated to antibiotic stewardship programs within NHs/SNFs, which may allow for a better understanding of such programs in the long-term care setting.
	3.2.1	Establish pilot or demonstration projects that evaluate the implementation of the antibiotic stewardship programs (e.g., MARR Tool Kit) and their impact on antibiotic use practices in LTCFs.
	3.2.2	Identify the best methods to implement and sustain antibiotic stewardship programs within LTCFs.
	3.3	Conduct additional research to determine barriers to implementation of staff influenza vaccine programs and causes for low vaccine uptake among long-term care staff. A pilot project could be conducted to evaluate the feasibility of collecting the relevant data to monitor and systematically report influenza vaccine coverage rates for LTCF staff.
	3.4	Consider exploration of the role and feasibility of including HAI-specific metrics in future NHVBP demonstrations
Communications	4.1	A knowledge and training gap may exist in rural areas, where primary care physicians often serve as medical directors of LTCFs without any formal training or background in geriatrics. Some rural health providers may not be connected to formal geriatric training programs or NH/SNF/long-term care associations but can be targeted through various education networks under HRSA. Some state health departments (including licensing bodies and public networks) and state HAI coordinators under the American Recovery and Reinvestment Act also may distribute materials and disseminate messages from the HAI strategy and could be focused on rural providers.
	4.2	Consider making a special effort to coordinate with the annual flu vaccine campaign, established to highlight the importance of continuing influenza vaccination. The HAI/long-term care work could focus especially on efforts to encourage long-term care staff as well as consumers and their caregivers and visitors to protect NH/SNF residents by getting immunized.
	4.3	Develop free clinical education materials, perhaps as phone apps, that assess clinicians' knowledge and connect them with Web-based training.
	4.4	Offer campaign outreach materials, royalty-free, to an array of audiences, including manufacturers of equipment and goods used in long-term care, to aid in increasing the availability of all outreach materials.

"This course was developed from the public domain document: National Action Plan to Prevent Health Care-Associated Infections: Road Map to Elimination (2013) - U.S. Department of Health and Human Services."