

Features

**FRONT-LINE WORKER ENGAGEMENT:
GREENING HEALTH CARE, IMPROVING WORKER AND
PATIENT HEALTH, AND BUILDING BETTER JOBS**

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ABSTRACT

Frontline workers have a great deal to contribute to improving environmental sustainability of their employers and the health of workers and patients. This article discusses a national project of the Healthcare Career Advancement Program, funded by the U.S. Department of Labor to support green jobs development. Implementation was accomplished through a labor/management collaboration between union locals and 11 employers in four regions throughout the United States. The project developed and implemented a model of training and education for environmental service workers and other frontline health-care workers in hospital settings that supported systems change and built new roles for these workers. It empowered them to contribute to triple bottom line outcomes in support of People (patients, workers, the community), Planet (environmental sustainability and a lower carbon footprint), and Profit (cost savings for the institutions). In the process workers more clearly articulated their important role as a part of the health-care team and learned how they could contribute to improved patient and worker health and safety.

Keywords: environmental sustainability, frontline workforce, patient and worker safety and health

This article discusses a project of H-CAP (Healthcare Career Advancement Program) that supports career advancement for incumbent workers while helping ameliorate some of the negative environmental impacts of the health-care industry and improving both worker and patient safety and health. H-CAP is a national organization of the Service Employee International Union and employer partners, working together on workforce issues and career advancement. In this project, its labor and management partners, as well as other collaborating organizations, engaged frontline workers, particularly those in environmental service (EVS) departments (housekeeping), and enabled them to participate in and even lead efforts to support a more environmentally sustainable health-care industry. Through training, education, and labor/management collaborative work on project development, these workers played an active role not only in the implementation of programs and policies that support a more environmentally friendly health-care system, but also contributed ideas and projects that improved their employers' triple bottom line. Furthermore, frontline worker application of critical thinking skills improved patient satisfaction scores in some institutions and job satisfaction overall. Participation in a labor-management process made it possible for these workers to become a more vital and conscious part of the health-care team and also participants in improving a number of outcomes that are critical to the health-care industry, including both patient and worker safety and health.

All too often workers in entry-level and low-wage jobs see little opportunity for advancement. One important goal of the program was to build a new career ladder for workers in EVS and food service that could lead to jobs in the field of environmental sustainability, environmental engineering, waste management, or other emerging jobs that support environmental sustainability. With training that increased the value of workers' current jobs plus the opportunity to work towards new positions, both the union and the employer saw a chance to retain the best workers, build the strength and reputation of the department, and reward those who demonstrated leadership and project development skills. But first the project had to demonstrate its potential to support triple bottom line outcomes for the department and the institutions.

GREEN JOBS, GOOD JOBS, AND SAFETY FOR WORKERS AND PATIENTS ALIKE

Environmental sustainability and health-care reform are both in the forefront of public discourse and the subject of many heated and protracted discussions. These issues tend to be treated as discrete topics, with few connections made between the two, when in fact they share many points of convergence. Not least among them is the health-care industry's reputation as both a major user of natural resources and a major contributor to waste and environmental pollutants.

The Healthcare Career Advancement Program addressed these issues through an innovative labor-management collaboration on environmental sustainability in health care.

Health Care Without Harm (HCWH), a major organization in the forefront of an international movement to green health care and a collaborator on the H-CAP project, states:

Climate change, chemical contamination, and unsustainable resource use are all exacerbating ill-health the world over. These environmental health problems are increasing pressure on, and eroding the capacity of, already thinly stretched health care systems. Meanwhile, the health sector itself is paradoxically contributing to these very environmental health problems, even as it attempts to address their impacts. Through the products and technologies it deploys, the resources it consumes, the waste it generates and the buildings it constructs and operates, the health sector is a significant source of pollution around the world, and therefore an unintentional contributor to trends that undermine public health [1].

The harm done makes itself manifest in an unhealthful impact on the community, patients, and the workforce, who, along with patients, is exposed to harmful chemicals, pollutants, and health-care-associated infections (HAIs). These are some of the unintended and negative consequences of current practices in the health-care industry. John Ebers, from Practice Greenhealth, an organization that partnered with H-CAP on its green project work, states as follows (in particular highlighting waste disposal issues):

Beyond the fact that hospitals are spending valuable financial resources to dispose of these large volumes of waste, the ways in which waste is handled has the ability to significantly impact human health and the environment. Waste often ends up in a landfill where it produces methane—a potent greenhouse gas with six times the global warming potential of carbon dioxide, or ends up in a medical or waste-to-energy incinerator which also produces greenhouse gases while concurrently emitting dioxins, heavy metals such as mercury and cadmium, HCl gas and other toxic substances while leaving a toxic fly ash residue that must be managed. In fact, incinerators emit more CO₂ per megawatt-hour than any fossil fuel-based power source—including coal-fired power plants, and have been linked to an increased risk of asthma in the surrounding communities [2].

The data presented in this paper were gathered primarily from three sources: the quarterly narrative reports that were submitted by project partners; a survey of program participants; and the final regional report on environmental outcomes that was prepared by Practice Greenhealth.

H-CAP'S PROJECT: A FRONTLINE WORKER APPROACH TO ENVIRONMENTAL SUSTAINABILITY IN HEALTH CARE

In health care, the triple bottom line is described as an outcome that supports People (patients, workers, the community), Planet (environmental sustainability and a lower carbon footprint), and Profit (cost savings for the institutions, recognizing that many are technically not-for-profit). The frontline workforce is well situated to partner and in some cases even lead efforts to support that bottom line. In the work H-CAP has done with more than 2,500 EVS and dietary workers and 11 employers around the country, we found that these low-wage workers are a valuable source of creativity, leadership, and collaboration on greening health care, supporting the triple bottom line, and improving the health and safety of both the workforce and patients.

More than just a contributor to global warming and pollution, health care also has a reputation as one of the most unhealthful industries for workers. According to the National Institute for Occupational Safety and Health (NIOSH),

Healthcare is the fastest-growing sector of the U.S. economy, employing over 18 million workers. Women represent nearly 80% of the healthcare work force. Healthcare workers face a wide range of hazards on the job, including needlestick injuries, back injuries, latex allergy, violence, and stress. Although it is possible to prevent or reduce healthcare worker exposure to these hazards, healthcare workers continue to experience injuries and illnesses in the workplace. Cases of nonfatal occupational injury and illness among healthcare workers are among the highest of any industry sector [3].

The promising news is that many hospitals and other health-care institutions are working to ameliorate their environmental impact in ways that simultaneously improve the health and safety of their workforce as well as patients. H-CAP developed a model supporting environmental sustainability through an American Reinvestment and Recovery Act (ARRA) grant from the U.S. Department of Labor (DOL). It was one of 25 grants awarded under DOL's Energy Training Partnership program. The program engaged frontline workers, their departmental-level managers and supervisors, their unions at all levels, and the operational leadership of the institutions in which they worked. It provided universal training for workers in the environmental service (housekeeping) departments and, at two institutions, food and nutrition service departments. EVS workers were targeted for the training because of their key role in waste management, the use of cleaning chemicals, and their mobility and omnipresence throughout the institutions, which put them in an excellent position to be the eyes and ears of a hospital initiative on greening health care.

THE EDUCATION AND TRAINING MODEL

Adult learning theory [4] speaks to the importance of connecting new knowledge to the needs and concerns of adult learners. To ensure that workers are engaged and to meet the objectives of the project, the training provides workers and their supervisors with not only an understanding of what needs to be done, but also the why and the how, as well as a connection to their life experience. Contextual learning theory, as articulated by the Center for Occupational Research and Development, also speaks to the importance of linking training to experience and frames of reference. According to this theory, learning takes place when experience and past frames of reference are linked to new information and knowledge.

Building upon this understanding, contextual learning theory focuses on the multiple aspects of any learning environment, whether a classroom, a laboratory, a computer lab, a worksite, or a wheat field. It encourages educators to choose and/or design learning environments that incorporate as many different forms of experience as possible (social, cultural, physical, and psychological) in working toward the desired learning outcomes. In such an environment, students discover meaningful relationships between abstract ideas and practical applications in the context of the real world [5].

Building on these theories, H-CAP developed a model that started from what workers already know and utilized their past experience to connect to new concepts in environmental sustainability in health care. For a workforce that is low-wage and very diverse both linguistically and culturally, we needed to incorporate an educational component that included some basics of environmental science, English vocabulary, literacy, and numeracy pertaining to measurement as well as tracking cost savings and other metrics. This component was designed to not only spark interest and inspire critical thinking but also to provide workers with a taste for further learning. We hoped that workers would be excited about the subjects and want to continue by taking advantage of the educational benefits that most of them have through their labor/management educational benefit plans. Indeed, this was an outcome of the project. For example, for the EVS workers at LAMC, a Kaiser facility in Southern California, the number of workers from the EVS department who took computer classes, CPR (cardiopulmonary resuscitation) classes and courses at a local community college went from two workers before the program began, to 40 workers by the time the grant was over. These classes were offered through funds negotiated by Kaiser Permanente and Service Employees International Union United Healthcare Workers West (SEIU UHW-W) as part of the workers' benefit package.

The curriculum was delivered through five labor/management partnerships in four regions of the country (New York City, the Baltimore/D.C. corridor, Seattle, and Los Angeles). Training enabled workers to take on new roles and

responsibilities as their workplaces moved toward reducing their institutions' carbon footprints, while simultaneously improving the quality of care and reducing costs, as mandated by the Patient Protection and Affordable Care Act (PPACA). They were also prepared for career advancement through the application of classroom-acquired, portable skills and knowledge to specific labor/management-defined workplace sustainability projects. The projects were developed through labor/management collaboration that engaged workers from conception through implementation.

The training was organized into “buckets,” with each bucket representing a module that was delivered at the workplace on work time. These included the following:

1. Seeing Green, to build a basic understanding of why environmental sustainability is important to health care and the community;
2. Water Use Reduction, to lower the stress on water supplies while minimizing the release of toxic waste into the environment (health care is a major user of water in most communities);
3. Energy Reduction, to lower the carbon footprint of the facility and reduce cost by locating sources of wasted energy such as lights and computer monitors that were left on unnecessarily;
4. Waste Reduction, particularly the reduction of toxic and biohazardous waste through proper segregation—reducing cost and the contribution of toxic materials to landfills and incinerators;
5. Recycling, to support cost savings to the hospital, reducing deposits to landfills, and saving natural resources (composting was also part of several institutions' goals);
6. Toxics, cleaning, disinfecting, and health and safety, to help workers understand the connection between disinfecting and the use of toxic chemicals, including when and how toxicity can be minimized); and
7. Communication skills, to help workers become effective agents for change.

CONNECTING EDUCATION AND TRAINING TO LABOR/MANAGEMENT PROJECT DEVELOPMENT

Each labor/management partnership developed S.M.A.R.T. (Specific, Measurable, Achievable, Realistic, and Timely) goals to apply the newly acquired understanding and skills to projects that could be measured and quantified. Additional customized training supported these goals at each institution. In some cases the customization was built into the core modules. In other cases, it was delivered through the creation of additional modules that supported a particular employer and labor/management committee.

Both the specific S.M.A.R.T. goals and the overall engagement of the workforce led to changes in both institutional operations and the environment. In some

cases the outcomes were small though promising. In other cases, the outcomes were quickly significant with the potential for even better outcomes in the future. For example, a recycling effort that was very successful in one section of a hospital was then moved to an entire floor with plans to gradually implement the program hospital-wide. The full impact of the changes initiated by the grant will be felt in the years to come. Examples of S.M.A.R.T. goals that were developed by participating labor/management teams include:

- conversion of chemicals to minimize toxicity where feasible without sacrificing infection prevention;
- reduction of regulated medical waste volume through improved waste segregation in operating rooms;
- creation of energy and water tracking and reporting mechanisms for EVS workers;
- development and implementation of a recycling program for cans, bottles, and shrink-wrap; and
- development and implementation of a rechargeable batteries program starting with the replacement of single-use batteries in towel dispensers and developing procedures for monitoring and charging them.

Other features of the project that served to build worker engagement, along with the opportunity for promotion of the workforce, included the Train the Trainer Program and a college-based certificate program. The Train the Trainer Program, which took a minimum of 36 hours, involved both workers and supervisors. Together they trained as peer trainer dyads to enable them to deliver the seven modules listed earlier. The training also taught principles of adult learning, facilitation, and presentation skills. The goal was to develop these trainers as institutional resources to support current and future training in their departments and throughout the hospitals. The program was implemented in all regions but was utilized most extensively in New York, where together approximately 60 workers and supervisors provided almost all the training for 649 workers at the three New York City participating hospitals. In some regions, the peer trainers led the training, and in others, they joined with project staff to complete training for those who missed classes. In Seattle, peer trainers from the EVS department helped to train workers from the food and nutrition services (FNS) department when the training was expanded to that department.

In addition to the Train the Trainer Program, workers and supervisors could enroll in a college-based certificate program called Sustainability in Healthcare. This program deepened understanding of environmental sustainability in health care and developed expertise in developing green triple-bottom-line projects. Participants learned how to develop and evaluate projects and also how to create presentations of new and innovative projects for implementation at their institutions. The workers who completed this course were qualified to apply for a new position at participating institutions, variously titled Green Lead, Green

Project Implementation Coordinator, or Green Initiative Liaison. These new positions were negotiated at eight of the 11 institutions, with two of the remaining three planning to create this new job in the future.

PROJECT OUTCOMES

Outcomes, both qualitative and quantitative, were achieved and documented, though due to the short timeframe of the project, not all could be fully documented by the end of the project. We found that measurement and tracking of environmental outcomes was challenging. Further study of current and ongoing projects should permit better tracking of these outcomes now that the program has been piloted and we know the range of potential results.

The outcomes described below are a sampling of the kinds of qualitative and quantitative data collected. These outcomes include systems change, improved patient satisfaction, increased use of soap, reduction of regulated medical waste, increase of recycling, and increased worker engagement. There was an almost universal evaluation by workers and their managers that labor/management relations improved. In addition, workers understood their jobs better, as well as the value of their role in the hospital, and the previously unrecognized talents of workers were discovered by their managers and supervisors.

Workers, their managers, their union representatives, and their program directors spoke easily and often of the qualitative outcomes of the projects. For example, a worker from New York Presbyterian stated:

When I first started here we had a little recycling program, but it really didn't take off. Now we're laying the foundations so our programs can really branch out. We try to set smart, achievable goals. We want to make sure that what we do lasts, like composting in our kitchen, using "green" cleaning products, water conservation, trash recycling, and red-bag [biohazard] waste reduction programs. . . . When a person comes in to our hospital and sees that we're "green," they know we're not only going to try to make people better, they know we're trying to make the world better [6].

Another worker reported the following on a survey conducted midway through the project:

Relationships [labor/management and between workers] have improved, communications got better, and coworkers respect other workers more. All workers in [my] department have a better understanding of our role in helping to improve the environment and the safety of co-workers, patients, staff, and visitors [7].

In addition, the grant had impacts beyond the workplace, including in workers' homes and communities.

I thought going green was just about using natural products or a certain type of paper towel. I didn't know about a lot of different chemicals or

lighting or water. It's good for workers and patients too. Some of those chemicals are very harsh. If we do a lot of recycling in the patients' rooms it will be helpful. We're getting new mops. I've even started buying a few new products at home [8].

When people see us doing recycling they'll get used to it and take it home. It's good for the whole community [9].

A significant outcome of the training at LAC + USC (a public hospital in Los Angeles) was the increase in patient satisfaction scores for the participating department. The department showed a significant increase in scores from 49 percent to 67 percent to a high of 86 percent on the cleanliness of the hospital environment over the course of the project. The labor/management partnership of SEIU Local 721 and LAC + USC cited the work that the union and employer were doing together as the reason for the dramatic increase in their score [10, 11].

The Practice Greenhealth consultant was able to track some of the outcomes of the projects related to a reduction of carbon footprints and cost savings. Using data from reports of pre-grant measures and post-grant outcomes, he was able to report on some promising results. Table 1 shows the outcomes of some S.M.A.R.T. goals in terms of their reduction of metric tons of carbon dioxide equivalent (MTCO₂E). This measure is one way to specifically track and report reductions in greenhouse gases due to changed practices in waste management. It is a part of the U.S. Environmental Protection Agency's (EPA's) Waste Reduction Model (WARM). Not all the outcomes were a direct result of the labor/management work. However, the program was recognized by the stakeholders as a contributing factor in all cases.

Table 2 represents a sampling of cost savings that the program was able to measure. In some cases the cost savings data were collected from a limited area of the hospital. In other cases the data were collected more broadly. The data indicate concrete results with the potential for much greater contribution to cost savings and to a reduction of the industry's carbon footprint in the future.

Several other outcomes demonstrate the value that workers were able to contribute to their employer and to the development of a more environmentally sustainable industry.

- A partnering hospital had an existing recycling program. In the first month after the incumbent worker training in the EVS department, recycling almost doubled, from 27.35 tons to 46.43 tons. This improvement was sustained for at least one additional month. In one hospital, there was a 10 percent reduction of red bag medical waste, a cost savings of \$11,866 in a five-month period of time.
- At a West Coast facility, where management had previously begun a composting program, composting increased by 54.3 percent [12].

Table 1. Outcomes of S.M.A.R.T. Goals in Terms of the Reduction of Metric Tons of Carbon Dioxide Equivalent (MTCO₂E)

Hospital	SMART goals	Reduction of MTCO ₂ E ^a
New York Presbyterian	Reduction of medical waste Increase recycling	-263
NYU Langone Medical Center	Reduction of medical waste Increase hospital-wide recycling	-111
Northwest Hospital and Medical Center	Conversion to use of green chemicals Develop composting program Initiate recycling in Emergency Department	-478,962 ^b
Swedish Medical Center	Increase recycling	-8,918,944 ^b

^aThese outcomes represent what was measurable during the project.

^bThe project was a contributing factor, not the entire cause of the reductions.

IMPACT ON WORKER AND PATIENT SAFETY AND HEALTH

While the project addressed a broad spectrum of issues, it had an impact on health and safety issues for both the workforce and patients in a number of ways. These included three areas that were also subjects of the training modules: waste, use of toxic chemicals, and health-care-associated infections.

Waste

In the early stages of the H-CAP program, the consultant from Practice Greenhealth conducted a baseline assessment of the participating institutions' practices in the areas of waste, water, energy, and chemical use. A walkthrough by workers, managers, and labor/management program leaders found promising practices as well as areas for improvement in many parts of the hospital. During these walkthroughs, workers contributed their insights. At most institutions, workers described instances of improper waste segregation with consequences including higher disposal costs and risks to the health and safety of workers. For example, they described how trash was often improperly disposed of in containers that were meant for infectious materials, that sharps were placed in improper containers, and that many workers, including managers and professional staff, did not have a good understanding of what could be recycled. Many workers understood that improper waste disposal not only led to higher

costs but also created greater risks to workers who handled materials—the heavier and more infectious the waste, the greater the risk of contamination to those handling the waste. Workers noted, however, that they were not empowered to share their observations because of their low status in the workplace. Through the labor/management meetings and process supported by this program, workers began to discuss these issues with supervisory and other staff, thereby supporting change, better waste disposal, and some of the outcomes that were noted above. Concurrent with this greater participation was their growing confidence as they became more knowledgeable about the impact of the institutional waste stream on their own health, and the health of patients and the community at large.

Use of Toxic Chemicals

Hospital workers and patients are subject to indoor pollution leading to asthma and other respiratory problems. Cleaning chemicals are a contributing factor [13]. In several institutions, we learned that some workers, not understanding how the chemicals worked, were either using higher concentrations of chemicals to make the solution “smell clean,” or were bringing cleaning agents from home surreptitiously because they believed their familiar products were superior to the greener chemicals the hospital was using. In the training, workers were offered explanations for what made chemicals effective, information about different infectious agents, and the difference between cleaning and disinfecting. Furthermore, it helped workers understand that highly toxic chemicals did not have to be used on surfaces that were not normally touched, that some less toxic products could be effective on floors and non-touch surfaces. By educating workers in the science and math of environmental sustainability, not just training them for new skills, and by engaging them in discussions about changes and projects, employers were able to get greater compliance with cleaning and disinfecting protocols. We received the following report from the project coordinator from the labor/management partnership in Los Angeles.

The Basic Green training here began with a focus on chemicals—both their sustainable usage and their effect on HAIs—because there was an immediate problem that new, greener chemicals and processes being introduced in the facility were being resisted and subverted by the workers. For the first time, workers were shown the “why” of what they were being asked to do. It was a powerful moment in every training session—they got it. And that understanding opened the way for them to begin thinking about their work in terms of a “career,” critical to the health and well-being of patients and staff alike [14].

Health-Care-Associated Infections

HAIs are a danger to patients as well as workers. Workers can become infected and bring infection home to their families. Compliance with hand-washing

Table 2. Measurable Cost Savings at Some Participating Institutions

Hospital	Project	Measurable cost saving	Comment ^a	Potential
NYU Langone Medical Center	To improve waste disposal and recycling	> \$31,000	Savings could be as high as \$200,000, given incomplete data.	The recycling program is continuing to expand.
New York Presbyterian (NYP)	To increase recycling and composting; and to reduce regulated medical waste	\$53,000	Heightened awareness of the recycling programs, coupled with the training, has assisted NYP in achieving this level of savings, although not all cost savings can be attributed to the pilot project.	As these efforts continue, cost saving will continue to rise.
Swedish Medical Center	To recycle on one floor	> \$5,000 per year per patient floor	The department-wide training on recycling and communication and the enthusiasm of the workers for recycling have been contributing factors to overall recycling improvements, although not all cost savings can be attributed to the efforts of the pilot project.	Recycling programs are expanding to additional floors and departments.

Northwest Hospital and Medical Center	To convert to green chemicals and standardize chemical use	\$4,000 per year	Cost savings have been attributed to the increased awareness and critical thinking skills of the frontline workers, although not all cost savings can be attributed to the efforts of the pilot project.	
Maryland General Hospital	To reduce waste	\$80,000	Cost savings have been attributed to the increased awareness and critical thinking skills of the frontline workers, although not all cost savings can be attributed to the efforts of the pilot project.	
Los Angeles Medical Center (Kaiser)	To recycle batteries, plastics, and reusable sharps containers	\$18,000 per year	The labor/management committee continues to track these savings over time.	The effort is expanding to additional floors in the hospital.

^aThese findings represent a minimum outcome based on documentation during the course of the pilot.

protocols, use of disinfecting gels, and an understanding of how infectious agents can be spread all support a healthier outcome for patients and the workforce. One indication of the success of the training was a measurable increase in the use of soap and disinfecting gel due to both training and labor/management collaborative work at one participating hospital.

NYU [New York University] tracked its soap expenses during the grant period. Over the last two years (of the grant) soap expenses have increased by nearly 50K dollars [\$50,000]. This metric certainly indicates an increase in soap consumption and hand washing. NYU will want to look at other metrics such as hospital acquired infections to evaluate the efficacy of this program and others [15].

The hospital management agreed that the increase was in part related to the training provided by the project.

Water

The health-care industry is often the largest consumer of water in a community. Wastewater that leaves an institution contains high levels of organic contaminants as well as pharmaceuticals and other chemicals. Reducing water use, where possible, was one of the goals of this program. One project that supported water use reduction was the introduction of microfiber mops. Microfiber mops use less water and can be used with smaller pails than traditional mops. With less water, smaller buckets, and lighter mops, this cleaning system has the added potential to reduce fatigue, back pain, neck strain, and other upper body injuries. The mops also hold liquid without dripping, leaving a light film of water on the floor that dries quickly, resulting in fewer opportunities for slips and falls. Microfiber mop use also lowers the risk of spreading contaminants from one room to another as the covers of the mop heads are changed between rooms. However, because the mops use less water and fewer chemicals and because change can be hard for workers who have been using the same cleaning technology for years, in many institutions there was reluctance on the part of workers to embrace this new method. Some workers were reported to be bringing chemicals from home because they thought that they were not doing a good job of cleaning and disinfecting if the chemicals they used did not have a strong smell. Some fought the change on the misconception that they would be hurting the patients. Again, when workers understood not just what they were supposed to do but also why, there was improved compliance. In addition, the workers also understood their own self-interest in reducing their risk for back injury, slips, and falls.

Communication

Communication training was a major component of the program and probably the most important. Change, including change that supports patient and worker

health and safety, requires communication across job titles and teamwork among health-care workers from the top of the organization to the bottom. Yet often,

The greatest obstacle to change is arguably the hierarchical culture of health-care. Entrenched attitudes about scope of practice, professional “turf” and historical power structures can sabotage the essence of what teamwork is [16].

In changing systems for waste management, reduction of water and energy use, cleaning and disinfecting, and the prevention of HAIs, frontline workers not only need to become critical thinkers and problem-solvers in the work they do, they also need to find a way to communicate what they understand, see, and hear. Our module on communication specifically addressed communication in a multi-cultural and hierarchical environment as well as active listening skills. As EVS worker and Green Trainer Francisco Rodriguez aptly notes, understanding the value that the workers bring to the institution gives them a place to stand and by implication a place from which to speak.

The Sustainability in Healthcare Program has given Environmental Service and Building Service workers the opportunity to be part of major changes in our hospitals, homes, and communities. Going green, as it’s generally called, gives us guidelines to preserve our planet, save lives, and save money as well. In this program, I learned how important my work is to the health-care team. Do you know that each year more than 1.7 million patients acquire a preventable infection while in our hospitals? And almost 100, 000 of them die? These infections have a financial impact; each one costs an average of \$14,000 for which hospitals are no longer reimbursed. As a green trainer I learned that microfiber mops not only reduce the amount of water we use but also reduce cross-contamination, which leads to a decrease in hospital-acquired infections. After learning this and other important information I know that my job as an EVS worker is vital to patients and my hospital. We don’t just clean; we disinfect; we recycle; we manage different waste streams; and we help monitor and reduce the use of water and energy. We make a difference to our patients and add value to our hospitals [17].

CONCLUSION

Two of the most important and connected outcomes of this project were the ongoing commitment to greening health-care institutions and the partnership on greening and systems change that involved labor and management. For many of the institutions, this project was a first step. Those institutions with existing green committees had not often engaged frontline workers, particularly low-wage frontline workers, in their planning and implementation. By involving frontline EVS workers directly, the institution opens itself to the valuable voice of those who contribute to environmental and health outcomes at many levels. Now these green committees, whether newly created or expanded, are looking toward their next S.M.A.R.T. goals and continuing the work begun in this project. It is our

experience, in developing and implementing a program to train and educate environmental service workers, that when workers understand their role in supporting healthy patient outcomes, see the connection to their own health and safety, and are empowered to make a contribution to quality outcomes, the results are remarkable.

As we move forward, post-grant, we are seeing an expansion of this model at a number of institutions. We also see the potential for transferring this educational and engagement model to other needed issues in the rapidly changing health-care industry. For example, there is an ongoing need to train workers at all levels and very specifically EVS and FNS workers on infection prevention. This model could be customized and implemented for that purpose. We also see the potential for transferring the educational model to career-specific training for allied health positions where there is a need for incorporating quality initiatives into technical and clinical instruction, while at the same time providing workers with college credits for research and project development.

Now that the education and labor/management model has been developed and piloted with such promising results, there is a need for more follow-up assessment. The types of studies that would help refine and replicate the work that has been done in this field include data collection on triple-bottom-line outcomes, analysis of which aspects of the program are most important to success, analysis of the impact of the program on long-term worker and patient health and safety outcomes, and evaluation of the conditions for maintaining ongoing systems change.

This national project was able to succeed because of the labor/management partnership and the involvement of the frontline workers. H-CAP and the partnering organizations observed transformations that were both institutional and individual. These profound changes were not only about how institutions look at greening, but also a deeper validation of the importance of the role and knowledge of the frontline workforce. In closing we would like to share the thoughts of one of the program participants in Seattle:

I've learned how to make a project happen—to go through the process of brainstorming, gathering data, interviewing people, working within a diverse learning environment, gathering measurements to impact the Triple Bottom Line, and to make and give a PowerPoint Presentation. It's a way to start some changes. It starts with us [18].

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