Health Promotion Site Selection Blues: Barriers to Participation and Implementation

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Objective: To shed light on research-to-practice challenges in workplace health promotion research. **Methods:** More than 1200 companies serviced by a national insurer were assessed by measures, including management surveys, and insurance premium costs and risk profile. A 21-item Workplace Readiness Checklist was the core assessment tool. Quantitative and qualitative measures were used to identify 12 to 14 companies deemed most "ready for change." **Results:** The four priority candidate companies decided against participation. A post hoc survey to evaluate reasons for non-participation identified factors such as time allocations, the deteriorating economic environment, and the participatory nature of the interventions proposed for half of the study sites. Differing priorities within management also seemed to interfere with participation. **Conclusions:** A highly structured process for determining corporate readiness for participatory health promotion produced contradictory results.

There has been a considerable recent attention to the potential value of workplace health promotion (WHP) programs.[1–3] Formal evaluation of the health and economic benefits of such programs requires, among other things, the standardization of selection procedures to avoid potential selection bias. Standardizing the selection process necessitates, in turn, the use of comparable instruments to assess pre-program status and post-program effectiveness. Motivations include being able to conduct large scale inter-workplace comparative benchmarking in contrast to results obtained from independently developed assessment instruments. Standardization also simplifies the task of comparing commercial products from potential health promotion program vendors.

A successful evaluation process, if applicable for national use, might also promote certification processes and inform insurance rate structures. Aspects of this approach related to national standards and measures are reflected by the Wellness & Health Promotion Product Suite from the National Center for Quality Assurance (Wellness and Health Promotion 2009) and from the Wellness Corporation of America (http://www.welcoa.org/). It is also reflected in recent proposed national health promotion legislation (Heath Promotion FIRST Act–S.1001 & H.R2354).

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One of the most frequently generated off-site semi-quantitative assessment tools is some version of a workplace readiness checklist (WRCL), of which HeartCheck[4] is one relatively well-known example: another is the HERO Health Management Best Practice Scorecard© (www.the-hero.org). Checklists have been used to assess readiness for worksite health promotion,[5–9] organizational support,[10] and support in the broader social environment.[11] There are significant variations, but core indicators of a company's readiness for introducing WHP usually include assessments of administrative support for WHP, organizational culture, work demands and quality of the physical environment, the quality of existing health programs, and labor management relations. Survey items are often augmented by information gathered in qualitative measures such as interviews with key representatives from middle management.

Health Improvement through Training and Employee Control (HITEC) is an intervention study constructed to compare a professionally administered WHP and ergonomics program with a participatory program designed and developed by the workforce with assistance from professionals. It relies on the introduction of these two types of programs in geographically distinct but structurally similar paired plant facilities, each representing a single corporate organization and product line. All data collection procedures (occupational exposure assessment, personal testing, and questionnaire administration) and the approach to integrated health data are identical for both study arms. However, the professional site is designed around a more conventional approach to WHP with an orientation toward musculoskeletal health, personal behavior change, and performance optimization. The participatory site follows a more open-ended process, with priorities established by the employees themselves, and with emphasis on addressing the ways in which the work environment may facilitate or impede health behaviors.[12]

HITEC is a core intervention research project of The Center for the Promotion of Health in the New England Workplace (CPH-NEW) supported by the National Institute for Occupational Safety and Health (NIOSH) WorkLife Initiative (http://www.cdc.gov/niosh/worklife/). (An overview of CPH-NEW and its component projects can be found on the CPH-NEW web site [http://www.uml.edu/centers/cph-new/] and in the study of Punnett et al, 2009.[13]) The premise of this and other CPH-NEW studies is that linking WHP and workplace occupational health and safety (OH&S) programs will positively affect individual health and the work environment, and that these benefits will be measurable by variables reflecting health status and program costs.

The following account characterizes an effort to assess workplace readiness for WHP introduction, as part of the HITEC study, by directing a highly structured administration of a WRCL, along with key personnel interviews and surveys, to a pool of national candidate companies. The structure and progress of the selection process, the responses of selected companies, and follow-up interviews are documented below in hopes that it will shed light on specific research-to-practice challenges not yet recognized for this type of an approach.

METHODS

Overview of Site Selection Approach

The multi-level site selection process was undertaken in the late spring of 2006 and was concluded a year later. Site selection involved several different strategies. By far, the most extensive and structured approach was performed jointly with a major North American worker's compensation and liability insurance carrier. The targeted site selection pool was its national accounts list, consisting of more than 1200 companies distributed over seven geographic regions.

Multiple screening tools were developed and incorporated into the site selection process. These included key personnel interviews, qualitative assessment methods, brief surveys, and informed judgment from the insurer's accounts managers and risk control staff. A WRCL was developed exclusively for this project, to select those companies most likely to participate while satisfying critical threshold screens. Because of the volume and diversity of companies in the pool, and to study-specific criteria for participation, the comparative rankings from WRCL became the single most important instrument in an otherwise detailed, multi-faceted and hierarchical selection process.

Establishing a selection process with the help of a national insurer afforded several distinctive features. Claims managers and risk control specialists had specific familiarity with management policies and company safety and health cultures, as well as databases on the nature, frequency severity, and costs of workplace injury. The insurer's interest in eventual commercial implementation of a successful research-based intervention program provided a novel platform for research-to-practice conversion and for potential rate structure revision from cost savings by client companies using effective WHP and OH&S programs.

At the same time, a structured intervention study, albeit one based around ergonomics and WHP, involved significant departure from the usual insurer-client relationship. The WRCL introduced a type of data collection that differed from the insurer's traditional procedures. There was also a study requirement for participating companies to share de-identified group health and disability data, in addition to worker's compensation data. Although structural firewalls were set up by the study team to limit the insurer's access to proprietary information, such as group health insurance data, this integrated health perspective was again a departure from usual practices. Last, an important stipulation of the HITEC study design was that a candidate company would commit one of its study sites to a participatory program, based around workforce-directed design teams. This again was a departure from the usual relationship with a vendor or consultant, where the company selects the program and usually prefers broad-based, rather than piloted, introduction.

To facilitate the site selection process and to assist in the development of assessment instruments, a steering committee was formed with members of the university study team and representatives from the insurer, including the regional managers, managers of national claims accounts, representatives from underwriting, the medical department, and risk control.

The primary selection procedures to determine site inclusion were made below the level of the steering committee, at the level of the carrier's seven regional offices. An executive group included representation by senior personnel from the insurer's medical, accounts, and risk control departments. This group performed final executive decision-making and vetting, referring all decisions back to the steering committee.

Site Selection Criteria

The study selection criteria evolved from the study research plan. To compare a more traditional site with an experimental participatory site, the following selection criteria were essential:

- At least two sites per employer, so that that the paired interventions would occur at parallel and non-contaminated locations.
- Sites that were sufficiently large and stable (>300 employees) so that there would be at least 150 participating employees per site per intervention arm, assuming a combined participation and turnover rate of 50%.
- Locations compatible with the study travel budget and logistics.
- A roughly equal gender distribution within broad job categories, ie, clerical and production.
- Agreement to provide group health information with personal identification protections.
- Employee availability during working hours for WHP and OH&S activities.
- Evidence that both sites could benefit from an intervention.

These were reviewed, vetted, and accepted by the steering committee before being incorporated into the WRCL and other site selection instruments.

Phase I: Qualitative Reduction of the Site Selection Sample Pool

The initial target list of 1200 national accounts required substantial qualitative reduction at the regional level, where there was most direct familiarity with client companies. The majority of companies proved to be ineligible for structural and obvious a priori reasons, such as inappropriate plant size and availability, low claims and health care costs burden, and disinterest in WHP. Identifying these exclusions was managed through two parallel processes.

A 4-item site solicitation questionnaire (Table 1) was sent from each of the insurer's regional offices to its key middle management contact at the company, either in Human Relations or Health and Safety. Failure to respond was accepted as qualitative disinterest. A negative response to a single item was disqualifying, unless overridden by the knowledge and experience of the account manager.

In parallel, corporate risk control screened the entire national accounts list in accord with three inclusion criteria: 1) two sites with similar production processes and thus likely similar exposure profiles; 2) sufficient plant size for study power; and 3) sufficient worker's compensation claims activity to justify interventions. By using these inclusionary criteria, each regional claims office selected 7 to 8 best candidate companies for quantitative assessment.

Phase II: Quantitative Assessment by WRCL

The second and most exacting phase of the selection process was based on the administration of a 21-item WRCL, developed as an adjunctive tool to rank the companies showing the most promise

TABLE 1. Screening Questions for Phase I of the Site Selection Process

1. Are your group health costs and/or workers compensation costs rated at or above your sector norm?
   __ Yes __ No
2. Does your workforce consist of at least 300 people that could be involved in a research study?
   __ Yes __ No
3. Do you currently have a Safety Committee?
   __ Yes __ No
4. To conduct a thorough test of a new system for promoting health and safety, are you likely to be able to commit resources over a multiple-year period (e.g., meet with researchers, share existing data, administer surveys, etc.)?
   __ Yes __ No

for being able to commit to an intervention that integrated ergonomics and WHP. The WRCL was intended to reduce the regional lists of candidate companies by approximately three quarters to a list of 12 to 14 national companies considered to be most ready for introduction of the intervention. This set of high priority candidates would be considered suitable for in-depth recruitment and program development, following more direct and thorough evaluation processes.

The WRCL is essentially a checklist of key variables (Table 2). Its initial drafting involved a determination of compatibilities between a priori elements of the research plan, such as access to group health data and company culture amenable to participation during work hours, and common data fields maintained by the carrier for its national accounts.

The WRCL followed an approach undertaken by other research initiatives oriented toward evaluating workplace readiness, particularly HeartCheck.[4] The core domains and questions were modified by interviews and focus groups with insurer representatives from accounts, medical, risk control, and underwriting. Where there was disagreement between regional, national, and academic parties, reconciliation of domain selected for inclusion was made at the level of the steering committee. Before application, the checklist was reviewed and refined by a senior executive group, consisting of members of the steering committee with corporate executive status.

TABLE 2. Fields and Explanations for WRCL, Developed for Phase II of the Site Selection Process

Domain	Item	Description
Physical characteristics = 4	Company size	≥2 sites at >150 employees per site
	Company characteristics	Mixed salaried and hourly workforce/varied job tasks
	Facility location	Drive and return to sites within 1 d
	Site independence	Site sufficient for content independence
Health care costs and severity = 4	Health care costs	Premiums and costs near sector norm
	Health care burden	Incidence and prevalence at sector norm
	Job injury and illness rates	Rates at sector norm (≤1SD from mean)
	Serious medical conditions	Confidential consult on serious health problems
Insurance characteristics = 5	Stability of insurance	WC insurer stable for 5-yr study
	Group health data availability	Available de-identified group health data
	Work comp data availability	Available of worker's comp data
	Loss sensitive account	Potential for direct cost savings
	Record transparency	Availability of health records for analysis
Confidentiality maintenance = 2	Confidentiality maintenance	Identified data restricted to study PI
	Restricted use of health info	New data excluded from non-study use
Flexibility for participants = 3	On-site work-time allocation	Provide onsite time for annual survey
	On-site exposure evaluation	Worker available exposure monitoring
	Participatory process time	Onsite time for design teams
Workplace culture = 3	Accommodation to change	Openness to change
	Adherence to study terms	Willingness to accept intervention
	Active safety committee	Joint labor/management activity

Following this process, the checklist included six domains: 1) company characteristics (4 items); 2) health care costs and severity of disease and injury (4 items); 3) insurance domains such as data transparency and availability, insurer stability, and level of financial exposure (5 items); 4) confidentiality and privacy for employees (2 items); 5) employee time flexibility for on-site participation (3 items); and 6) workplace culture and openness to change.

The opportunity to construct quantitative and often confidential domains around insurance, financial exposure, and health care costs was the principal motivation for developing a novel WRCL for HITEC, rather than relying on other instruments. There were already substantial data on claims and utilization that were available to the insurer. Although these were not provided to study investigators, they were objective criteria used by the insurer for scoring. The presumption was that there was a level of detail that would have been inaccessible to a more generic instrument. This also meant that the instrument would likely be specific to the HITEC study.

The WRCL was completed by the regional accounts executives with consultation from staff. Although the executive raters were instructed on the performance of sensitivity analyses using other weighting schemes to crosscheck the robustness and consistency of their ratings, there was no testing for inter-rater reliability between regions. Thus, each regional office can be considered as an individual unit for reporting purposes.

The checklist incorporated cell-index factors (1 to 5 scale: 1 = unfavorable; 2 = slightly unfavorable; 3 = neutral; 4 = favorable; and 5 = very favorable) and weighting factors (1 to 10; 1 = low weight; 10 = high weight). The cell-index factors were an averaged input from estimates supplied by the regional staffs and steering committee. The weighting process made it possible to conduct a sensitivity analysis of selection criteria "trade-offs," as recommended by Chapanis.[14] Various combinations of weights were tested to verify that ranking would not change from any modest variations in weights and cell-index factors. The reason was to stabilize across item weights while allowing for full flexibility in the assignment of cell-index factors regionally. As noted, regional accounts executives were encouraged to conduct further sensitivity analyses to assure rank stability, but it was understood that they would likely rely on something close to the recommended weighting system. The maximum possible score was 605.

Phase III: Recursive Processes and Final Selection

The approach to final selection was semi-qualitative and fell partially outside of the WRCL scores. The underwriter reviewed each account to confirm that the company carried sufficient direct (non-insured) risk so that successful interventions would provide direct cost savings to the host company rather than only insured cost savings to the insurer. After consultation with the underwriter and the steering committee, the senior executive group selected the two primary accounts (four work sites total) and two back-up accounts (another four work sites total) that would be the target of an intensive recruitment effort from the steering committee and the insurance broker.

In fact, the entire selection process involved qualitative review and information exchange between regional and national components at each selection stage. As illustrated in Fig. 1, at all stages, there was iterative bi-directional review of instruments and their face validation through independent review and question ranking by local, regional, national, and academic members of the steering committee. In addition, there was always a route for

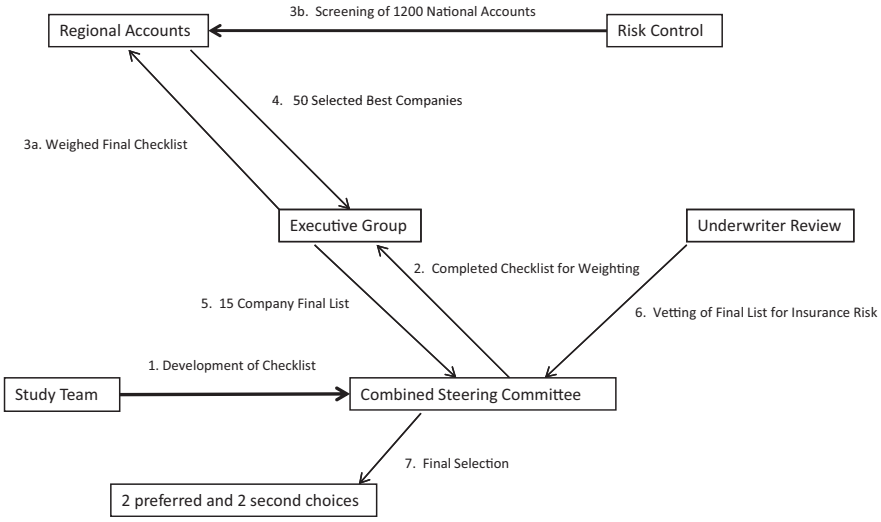

FIGURE 1. Selection process algorithm.

qualitative correction if selection criteria and regional managerial observations were in conflict.

The targeted companies were approached with a key informant presentation and interview between the account executive and insurance broker and with management representatives from health and safety and human relations. The object was for the mid-level managers to first endorse the project and then to make the lead presentation to senior management, and at the same time to have the broker's assurance of utility. Prepared materials consisted of Power Point presentations; dossiers on company worker's compensation costs and severity of injury and disease to demonstrate targeted areas in need of improvement; and background materials on health trends, and the economics of preventive intervention. Because the HITEC study included a detailed cost evaluation component, details of a cost-plus model for program introduction was also presented. Each site was provided with a detailed timetable for probable time allocations on the part of employees and management. Scenarios were presented to reassure senior management over its investment prerogatives for WHP. Preliminary efforts were also made to outline architecture for an integrated database for group health, worker's compensation, and disability management. Presentations stressed flexibility and opportunities for site-specific modifications, adopting two critical research-to-practice themes advocated by Glasgow and Emmons.[15]

There was considerable elaboration of the difference between the participatory site and the matched "professional" site that would sponsor a more traditional management-directed WHP and ergonomics program. Accordingly, at this stage, there was assessment of the existing WHP program, so that proposed activities would be additive rather than competitive. The HITEC approach assumed that existing WHP programs with their HRAs, incentives, and use of outside vendors would continue with additional emphases on aging, musculoskeletal health, and increasing participation and sustainability. The ergonomic program at the professional site, which would include functional job evaluation, was presented as additive and was costed as a gratis high quality service, which would include functional job evaluation.

The participatory site presentation specified that the same technical content would be available through the study team, but emphasized the extensive upfront investment in developing a small internal team of non-supervisory employees that would engage in creative design efforts for workplace change to address those health issues the team members viewed as the highest priority.[12] A recommended structure of design teams at the participatory site along with examples of site-specific experience-based problem-solving scenarios was provided to help explain the proposed participatory processes. The suggested model was for this design team to regularly report to a steering committee that included management representation along with members from any established health and safety committee or work life team. The suggested representation on this steering committee 1) at least 50% workforce representing various job functions and levels of responsibility; 2) safety/health/medical personnel; 3) human resources; 4) a representative with fiscal authority; and 5) a member of senior management. This had been the reason that an operating health and safety committee was a selection criterion. All prepared recruitment materials relied heavily on the insurer's database and were independently vetted by the insurance broker.

RESULTS

Outcome of Selection Process

In phase I, the insurer's seven regional claims executives selected a total of 53 accounts (106 sites). In phase II, the WRCL was applied to these priority companies. Compilation of the WRCL scores led to identification of the 14 highest as the "most ready" companies, ie, those with the highest scores. Eight were publicly owned companies and six were private. Their range in total employed population was from 950 to 65,400 employees (Table 3); employment at specific plant sites generally ranged from approximately 300 to 800 full-time employees. Companies E and F were chosen from the list of 14 as the two most ready sites. Two additional companies were chosen for back up.

Application of the WRCL is demonstrated in Table 4, which provides domain and weighted global scores for six of these 14 companies. Included are the two highest ranking, two of the lower ranking companies, and two middle ranking companies. The two highest ranking companies (2 and 5; also E and F) were also the two companies that were selected the two priority sites.

After lengthy preparation and enthusiastic endorsement from health and safety personnel, employee relations and brokers, presentations were made to senior management at each of the priority sites. In each case, decisions against participation were made at the senior management level. The decision-making process took 3 to 4 months and involved multiple site visits, preparations of secondary materials, and discussions with the study team and the insurer's representatives. Although the effort was less intensive at the two

back-up companies, there were similar decisions against participation. Requested clarifications included

1. Detailed personnel time requirements extending over 4 years.
2. Recommended structures and identification of key personnel for design teams at the participatory site.
3. Multiple participatory scenarios to clarify the participatory process.

The uniform decisions against participation were unexpected, given the length and detail of preparatory discussions, the enthusiastic acceptance at the mid-level, and the stated interest in WHP as a company goal. As a consequence, we conducted a post-hoc evaluation process in an attempt to determine what went wrong and to learn from these mistakes.

TABLE 3. Summary of 14 Candidate Companies With Highest WRCL Scores by Insurer

Industrial Sector	Company Size	Status
A. Metals manufacturing	950	Private
B. Metals manufacturing	4300	Private
C. Parts distribution	1000	Private
D. Consumer products	34,700	Public
E. Parts distribution	32,000	Public
F. Consumer products	10,900	Public
G. Paper distributor	2000	Private
H. Consumer services	65,400	Public
I. Metals manufacturing	4152	Public
J. Food manufacturing	24,000	Public
K. Chemicals	15,800	Public
L. Electronics	25,600	Public
M. Construction	1000	Private
N. Advertising	3600	Private

Post hoc Evaluation

The two highest ranked companies (E and F) were contacted for follow-up by insurer representatives. These companies were assessed in two ways: 1) qualitatively by formal debriefing with key insurer personnel, especially the account managers, and 2) quantitatively by a follow-up survey distributed to key company personnel. This extensive survey contained items grouped under insurance/cost considerations, confidentiality, internal acceptance, logistical issues, work culture, project content, and costs. Respondents were asked to rate the issues from strongly positive to strongly negative in relation to potential study involvement, and then to rate the extent of the impact on the decision not to participate (no influence, moderate influence, major influence).

There were multiple reasons for resistance recorded in the insurance carrier interviews (Table 5). No attempt was made to rate or prioritize items. As expected, time and monetary costs were noted repeatedly. Many of these reasons will be familiar as issues typically raised with regard to occupational health research; however, a few were specific to this study design, such as reluctance to be bound by labor-management recommendations and belief that current worksite health promotion efforts were already adequate.

The employer survey results (Table 6) again highlighted time and monetary costs of participation as key disadvantages. One employer did not list any of the items as "strongly positive." For the other employer, the two items that were rated as both strongly positive and having a strong influence on the decision were current

TABLE 4. Representative Weighting and Scoring of WRCL for 6 of 53 Candidate Sites (Phase II)

		Site 1		Site 2		Site 3		Site 4		Site 5		Site 6	
Weight	Characteristics	Score	Weighted	Score	Weighted	Score	Weighted	Score	Weighted	Score	Weighted	Score	Weighted
2	Company size	1	2	5	10	2	4	3	6	3	6	5	10
2	Company characteristics	5	10	5	10	3	6	3	6	3	6	2	4
6	Facility location	2	12	4	24	1	6	3	18	5	30	3	18
8	Facility site independence	3	24	4	32	3	24	5	40	2	16	4	32
10	Health care costs	5	50	5	50	1	10	3	30	2	20	3	30
5	Health care burden	5	25	4	20	1	5	1	5	3	15	4	20
5	Job injury and illness rates	4	20	4	20	1	5	2	10	1	5	2	10
6	Stability of insurance	2	12	4	24	5	30	4	24	1	6	3	18
2	Group health data availability	5	10	5	10	5	10	5	10	5	10	5	10
8	Work comp data availability	1	8	4	32	3	24	2	16	1	8	4	32
8	Maintenance of confidentiality	2	16	4	32	1	8	3	24	5	40	4	32
7	Restricted use of health info	3	21	3	21	5	35	1	7	2	14	4	28
4	Serious medical conditions	4	16	1	4	3	12	2	8	1	4	5	20
3	On-site work-time allocation	5	15	5	15	1	3	5	15	1	3	1	3
4	On-site exposure evaluation	5	20	5	20	4	16	5	20	3	12	3	12
5	Participatory process time	2	10	4	20	4	20	1	5	2	10	4	20
4	Record transparency	3	12	5	20	5	20	1	4	3	12	4	16
8	Accommodation to change	1	8	3	24	2	16	1	8	5	40	4	32
10	Adherence to study terms	1	10	5	50	5	50	3	30	2	20	5	50
10	Active safety committee	2	20	5	50	4	40	5	50	2	20	5	50
5	Loss sensitive account	5	25	5	25	1	5	1	5	1	5	5	25
	Total score (sum of weighted)	346		513		349		341		302		472	

Score key: 1, unfavorable; 2, slightly unfavorable; 3, neutral; 4, favorable; 5, very favorable.
Weighting key: 1, low weight; 10, high weight.

TABLE 5. Reasons for Study Non-Participation (Two Top Candidate Companies) Cited by Insurer

Time and resource demands
Release time for employees for study participation
Time demands on a middle management already running lean
Expectation that employee sponsored initiatives would lead to more costly incentives
Legal and administrative concerns
Documentation of exposure-related health problems would be used in collective bargaining
Study findings would be discoverable and might lead to legal liability
Management would be legally captive to joint labor-management recommendations
Business climate concerns
Difficult economic conditions lowered the priority for study participation
Expected reductions in management personnel would compromise continuity
Insufficient resources to implement structural changes
Insurance issues
Discovery of unrecognized hazards would increase insurance premiums
Resources were already committed to insurers and vendors and ergonomics and health promotion programs
Exposure to non-insured potential costs too small to justify extensive interventions
Efficacy
Concern with negative results, given time and efforts
Worksite health promotion already in place without clear-cut further advantages
Company culture
Philosophy that it is more cost-effective to be an industry follower rather than a leader
Threat to traditional corporate anonymity
Concern with adverse publicity by a government agency (NIOSH)

TABLE 6. Reasons Cited by Employers for Study Non-Participation (Two Top Candidate Companies)

The factors that were rated as both "strongly negative" and also a major influence in the decision not to participate by both employers were
Publicity or public exposure of the company
Anticipating lay-offs or other major personnel changes
Interference in normal routines from onsite study team
The 4-year duration of the study
Time required for participation in health promotion activities
Time required at participatory site
Interruptions in production and sales
Possible costs for instituting health promotion
Possible costs for ergonomic and work design change
Unseen or unrecognized costs
Additional negative factors that were rated as both strongly negative and a major influence by just one of the companies were
Access of insurer to group health and disability records
Access of study team to group health and disability records
Other concerns with privacy of company decision making
Concerns from the health and safety staff
Time required for on-site questionnaires and testing
Time required by management personnel
Time required by health and safety personnel
Time required by production supervisors
Current business climate
Risk of alarming workforce on health risks
Employees unlikely to take part in sufficient numbers

volume and costs of group health claims and considering a change in group health carrier.

The current volume of costs of workers compensation claims was rated as a "moderately positive" reason to participate and a major positive influence by one company. In response to an open-ended question, the main advantages described by the two companies were cost reductions, wellness and workers compensation improvements, and reduced employee turnover.

There were significant overlaps between the assessments of the carrier's claims personnel and the company personnel. These included concerns about the time and costs involved in employee participation, and the difficulty that recommendations made in either the professional or participatory arms would not be followed because of cost or programmatic reasons, with the resultant risk of increasing legal liability. There were, however, several employer concerns that were not given such high priority by the carrier's representatives. These included the severity of the coming business climate in late 2007 with large anticipated lay-offs, a concern that the carrier would use transparency for its own ends, and the concern that a workforce informed of potential health risks would lead to increased costs from exposure to worker's compensation claims.

Key Roles and Interests in the Site Selection Process

The bi-directional nature of the site selection process with its self-correcting feedback processes, in addition to it's purely reductionist function, was also a constructive process for aligning interests. The process began with the university research team's scientific plan and reliance on external validation through peer reviewed studies. The process of extension next engaged key personnel in the insurer's national office, with interests in developing and testing an experimental intervention program. From this point, the insurer needed to engage two internal groups: 1) parallel groups from risk control and underwriting in order actualize cost savings from prevention, and 2) the regional accounts managers and their staffs who would be the points of contact with company personnel. At this point, there were two external contacts. One was the insurance broker, who would make an independent recommendation to the company. The other was the health and safety and HR managers. The latter needed to be in agreement on the potential value of the program and the acceptable extent of staff and employee time.

It should also be noted that the final site selection included companies that had communicated through their mid-level managers a strong interest in developing WHP programs and prevention. In each case, the alignment of all of these interests was developed, accounting in part for the length of the site selection process. It should be appreciated that the approach and appeal to the CEO was the final stage and was not part of the reconciliation process.

DISCUSSION

A highly structured process for determining corporate readiness to engage in a participatory program of health promotion integrated with occupational health featured several layers of analysis and review to assess corporate readiness. The contradictory and unsatisfactory result suggests the inability of some higher management levels to embrace a novel integration of OH&S and worker involvement. It also suggests that there may be significant limitations in the gauging of corporate readiness by standardized instruments, if reliance on objective measures and attitudes of middle managers fail to reflect senior executive concerns and/or preroga-

tives. However, the idiosyncrasies inherent in this single study also serve as caveats to overzealous interpretation.

The multiple levels of the selection procedures involved information that exceeded the more narrow objective criteria from the WRCL. It would therefore be a mistake to infer too much about the transparency of WRCLs in a more general sense. However, the addition of more detailed selection procedures was, if anything, a fortification of the selection process, and more illustrative of actual practices.

Even though we took a largely hierarchical approach to organizational assessment, there was assessment of mid-level managerial personnel but no such assessment of the workforce. The importance of direct surveying of the workforce to gauge corporate readiness has been recommended[16] and administered.[4] However, given the resistance of senior management and the enthusiasm of mid-level management, it is unclear how additional bottom-up measures would have helped in this instance. Furthermore, although some published reports on assessment of workplace readiness have utilized employee or key informant surveys or interviews,[17,18] a quantitative approach relying only on a checklist is not uncommon.[5,19] Our reductionist approach featured aggressive customized recruitment at a small number of companies with standardized and generalizable elements identified at an earlier, although critical, stage in the selection process. We recognize that secular management decisions are in a sense a type of case study. It is also quite possible that site-specific considerations overruled the evidence suggested by quantitative assessment tools.

There was also some evidence from the post hoc evaluation that certain generic factors related to HITEC being a research study may have inhibited participation. Some identified barriers related to the research mission rather than the intervention content included concerns over publicity and independent publication of results, and the time required for filling out surveys and physical assessments. The experimental nature of the participatory intervention may have been a concern for companies with a more conservative corporate identity. The time considerations were aggravated by the requirement from the steering committee that study time should be compensated and occur during working hours. Nevertheless, the provision of high-level ergonomics consultation as an inherent study perquisite, without cost to the organization, was noted as a particularly attractive feature.

It should also be noted that the obstacles uncovered in this type of site selection process did not vitiate the HITEC study. Subsequently, HITEC was accepted and introduced at other sites, through a different, less structured, selection mechanism, based on personal contacts with senior management and labor by study personnel, without the aid of the WRCL or the insurer's accumulated data. The attractiveness of ergonomic interventions was again confirmed. Additional attractions for employee participation have been the protection of confidentiality and university independence. Additionally, the insurance carrier had limited success with an alternative recruitment strategy undertaken by the carrier through its "employer schools," without reference to the WRCL.

Use of the WRCL to Assess Organizational Readiness

The similarities shared by the HITEC instrument with other WRCLs is an articulation of standardization coming from a "one-size fits all approach."[20] Investigators from CPH-NEW initially deployed variations of these common instruments to assess "organizational readiness" and to compare checklist-generated predictions with outcomes observed in field experience. The WRCL used in this project had many generic similarities with other instruments and studies of organizational readiness. The EAT instrument[6] is a checklist used to determined organizational readiness for obesity programs. It has three domains: organizational characteristics and support (6 items); physical activity (5 items); and nutrition and weight management (3 items). The 100-point scoring system and item weight variation[4–16] has parallels with the HITEC instrument. Direct inspection was also limited because of the size of the 12 organizations that were studied. Although it segregated some components of current workforce health, its capacity to detect organizational readiness is unclear, given the absence of data on effectiveness.

Our instrument also had face validity derived from incorporation of elements from HeartCheck, an interview-based inventory to measure the existing structures of an organization that support employee's heart health. The first prototype contained 195 items representing six subscales of heart health such as smoking, nutrition, fitness, stress, screening, and administrative support. The interviewed subjects included human resource managers, occupational nurses, safety managers, health educators, and other professionals having responsibility and/knowledge of employee health issues.[4]

Another more recent format using a WRCL was utilized in the Working Well Trial. Additional features included an 18-item questionnaire, developed to assess the organizational health and safety climate of the worksites, and administered to employees. Its authors, Bauer and Jenny,[21] use the term salutogenesis to distinguish between a traditional workplace health concentration on risk factors and outcomes and an organizational approach, which is able to meet multiple and changing demands proactively rather than on a compensatory basis.

In short, there has been considerable investment in WRCL type tools that have a similar format. What is less clear is whether the WRCL approach can capture corporate readiness unless there is an already predetermined commitment to participate. The fact that the WRCL was a poor predictor of participation may reflect its particular use in the HITEC study. It was used as an assessment tool for initial site selection rather than a scoring system for organizations that were already committed at the senior level to program initiation. Others have also noted problems with standardized WRCLs because of the different perspectives of hourly and salaried workers.[22]

Barriers to Participatory Programs

The study team foresaw resistance to the paired introduction of two different types of integrated programs, one participatory and one more traditional and top-down. However, there were post hoc indications of more specific reservations toward the participatory site. These were due to time commitment and the appearance of an organizational commitment to anticipated recommended changes. HITEC site recruitment may have uncovered generic obstacles to acceptance of participatory programs that were not captured by either the checklist or other selection tools. This study suggests barriers that inhibit employers from committing to large-scale and/or long-term health promotion intervention projects, even when subsidized by a federal grant and even despite deep concerns over the control of group health and workers' compensation costs and workforce aging. Separate from the research process, some barriers encountered by HITEC appeared more related to the intrinsic characteristics of the proposed interventions. These included, in particular, the time commitment needed for employees to regularly participate in design team meetings, and the required commitment to perform identified ergonomic interventions.

Given the eventual acceptance by other employers, what appears to be needed is a clearer articulation of benefits versus costs of highest value interventions, and of how to manage organizational change in relation to WHP. These arguments might be strengthened by illustrations of feasibility and benefits in prior experience using similar iterative models, either for WHP or for OSH interventions (eg, Brosseau et al[23]). The structural issues of rising health care costs and the aging workforce are in any case going to increase in importance in the near future.

Although perceived encumbrances from participatory programs were evident, we were less effective in communicating strengths of this bottom-up workforce empowerment approach in the site selection process. Landsbergis[24] noted the interplay of organizational and individual factors in the modern workplace in his call for the professionalization of organizational research. His examples are the changing demographics and time and benefits requirements of an increasingly female workforce, and lean or more flexible work organization, which while offering more latitude in work content, also increases job strain by circumscribing decision-making authority. He cited the observation by Fisher and Belkic[25] that even aggressive individually based cardiovascular disease interventions have yielded few improvements when exposure to stressful workplace structural factors, in this case in municipal transportation, were unattended. The challenge for workplace investigators is to better identify barriers, and then develop a convincing case for new intervention formats even when full program outlines remain unclear. It seems likely that a multi-media and multi-level approach, one that includes management orientation and training, will be necessary.

Intervention Program, the Goals of Senior Management and the Alignment of Interests

In accounting for the discrepancy between WHP effectiveness and wide-scale acceptance, various investigators have emphasized the need for an alignment of interests, so that changes in company culture can be translated into individual health improvement.[26,27] However, the alignment of interests has meant different and sometimes contradictory things to different parties. This was relevant to the HITEC study, because there was an alignment of what appeared to be key interest groups: the insurer, the broker, the company's health and safety and personnel components. One group, the workforce, was excluded altogether, and the most decisive group, senior management, was not included until late in the process. The decision to defer on early involvement of the CEO was strongly advocated by the insurer and the corporate mid-level managers. The presumption was that the company CEO was working under time constraints that would obviate a detailed program review at any early stage. They believed that a positive executive decision could only be made after key personnel had recommended acceptance in a form that reflected the specific culture of the organization. In retrospect, the arduous process of aligning the key personnel involved in program execution was insufficient. Whether the HITEC programs with their participatory slant would have successfully aligned employee interests with managerial interests seems beside the point, given the differences within management itself.

Goetzel and Ozminkoski[28] have argued that a convincing case can be made for the congruence between successful WHP and improved productivity. However, an approach that is attractive as a return on investment strategy alone does not necessarily require employee acceptance. For example, Houle and Siegel[29] point out that smoking cessation and presumed health gains can be achieved through a punitive program, but at a cultural cost. It also appears to be the case that targeted WHP can effectively reduce absenteeism, and therefore increase productivity, without influencing health care costs, presumably a measure of disease outcome.[30,31] Thus, the perceived need for alignment of interests does not appear to be a condition universally recognized by all so-called "stakeholders."

The potential benefits for participating companies were not articulated in stark productivity terms. Rather advantages were presented in terms of the WHP and ergonomics and organizational consultation being offered as part of the study rather than as a direct cost. Work with the insurer on long-term premium structures was also presented as a benefit.

The HITEC site selection process, being based on a national accounts strategy, had an orientation toward larger companies. It is often argued that large companies with their specialized resources and capacity to develop national and global policies may provide the most successful milieu for WHP.[32,33] The National Worksite Health Promotion Survey by Linnan et al[34] certainly confirmed that larger companies were more likely to offer an array of WHP services. However, there are particular barriers that are specific to larger companies. Williams et al[35] compared perspective on WHP between corporate managers, physicians, and union personnel, and found significant differences in perspective, a misalignment of interests in these companies that were sufficiently large to support compartmentalization. Large companies, particularly large international companies, often have a significant investment in their most highly skilled labor.[36]

There is, however, an alternative perspective that smaller companies, although having limited personnel resources, tend to have greater direct involvement of senior managers in the work process and have more direct concerns with the health and well-being of individual employees. Medium-size and smaller companies may have more stable environments for participatory programs.[37,38] The HITEC site selection process may have foundered on some of the incongruities of company size. There was commitment and alignment of the study with a trained and motivated mid-level managerial staff. This did not translate into implementation by senior management.

Insurance, Avoided Costs, and Prevention

Although alterations in rate structure are sometimes posed as essential to prevention, any new program introduced by insurance providers may be resisted. The insurer's role in addressing worker health problems typically may appear to be compensatory rather than preventive. Preventive consultation and organizational candor may be restrained by periodic re-entry into the open insurance market. The post hoc review indicated that the insurer's access to health information and exposure hazards may have represented a threat rather than a basis for a partnership. A more positive business case for participatory WHP programs may be required given the limited impact of worker's compensation costs on total health care cost burden. This is underlined by the management concern that non-implemented recommendations coming from an internal design team would potentially result in demoralization and possibly increased worker's compensation costs or reduced productivity.

An example business case might follow the premise that a proposed experimental participatory WHP approach can be rationalized as an extension of established total quality management (TQM) practices. Worker health is construed as an "upstream" factor that requires management oversight, thus mimicking Deming's pioneering recommendation that the quality of materials "upstream" be carefully managed to assure quality in production processes "downstream."[39] In this model, the limited compensatory focus of conventional OH&S can never adequately manage health variations in individual employees that negatively impact production or production quality or employee health costs. Management might then be more willing to adopt an experimental WHP program that addresses this management problem by engaging small teams of workers in health promotion efforts, consistent with the use of quality circles in TQM. Quality circles in TQM are made up of small employee teams that are empowered to identify sources of variance in quality, and then propose and test solutions for their management, that often require changes in work organization. Participatory ergonomics, a key component in the proposed experimental WHP program, originally evolved from quality circles that applied basic ergonomics principles to improve work processes.

CONCLUSION

A highly structured insurance-mediated process for determining corporate readiness for a participatory health promotion

program produced contradictory results, suggesting the inability of some upper management components to embrace a novel integration of OH&S and worker involvement. Lessons learned from our experiences recommend the development of a more convincing business case that will appeal to upper management and convince them of the pressing need to scientifically evaluate new ways of empowering workers to address problems in work organization that negatively impact employee health and productivity.

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