

Community Environmental Health Concerns and the Nursing Process

FOUR ENVIRONMENTAL HEALTH NURSING CARE PLANS

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Environmental health problems are gaining increased recognition. Nurses can play a key role in the multi-disciplinary approach to these problems. Experience and education in counseling, along with sensitivity to client needs and beliefs, make nurses particularly valuable environmental health team members. Various authors have discussed the nurse's role in environmental health (Phillips, 1995; Pope, 1995; Rogers, 1994; Salazar, 1994). Because nurses are pivotal in providing ongoing care in ambulatory care settings, the need to be actively involved in providing care to clients with environmental health issues is paramount. The environmental health nursing care plans presented here provide general guidelines for ways in which the nurse can effectively approach community environmental health problems.

BACKGROUND

Community environmental health problems may be defined as the potential exposure of multiple members of a community to a chemical, biological, radioactive, or other hazard. Table 1 summarizes several ways in which community environmental health problems differ from

occupational environmental health problems. Community environmental health problems generally result from a specific environmental health threat within a geographically defined area. Industrial spills and toxic waste releases near residential areas may lead to exposures. Conversely, occupational risk is defined by employment rather than geography.

Exposure in community settings is often less well defined than in occupational settings, where industrial hygiene measurements describing the levels of exposure are frequently available. In addition, particularly susceptible individuals—the elderly, children, and persons with significant diseases—are present more often in community settings than in worksites. Because exposures are defined geographically, the population is often less well defined than in worksites. Finally, exposure levels in community settings are usually lower than in occupational settings; however, the duration of exposure usually is greater than in occupational settings. For example, a work exposure may last 8 hours a day for 5 days a week, but the community member's exposure is for 24 hours a day, 7 days a week.

Nurses can and should take responsibility for clients with environmental health needs (Lipscomb, 1994). As in other areas of nursing practice, nursing diagnoses and care plans can define methods to help nurses provide care for clients with environmental health issues. This article includes nursing diagnoses approved by the North American Nursing Diagnoses Association (NANDA) (Rantz, 1995). Nursing diagnoses and nursing care plans help the nurse organize goals and plans, and document and validate the importance of nursing care. Although aspects of environmental health may be unfamiliar to some, the approach outlined in this article integrates various aspects of environmental health and nursing into the eas-

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ily accessible and applicable format of a nursing care plan. Use of nursing care plans demonstrates areas in which situation specific information needs to be obtained (e.g., from textbooks or health departments).

DEVELOPMENT OF NURSING CARE PLANS

The community environmental health nursing care plans outlined in this article were developed with the use of several information sources. The authors participated in the operation of the Del Amo/Montrose Environmental Health Clinic, a large, community oriented evaluation and counseling program established to address the needs of a community with potential exposure to chemical agents. The chemicals came from two industrial plants. One plant produced synthetic rubber and may have released a variety of chemicals such as benzene, ethylbenzene, naphthalene, and others. The other industrial plant produced the pesticide DDT. Although the plants have closed, many community members and elected representatives expressed concerns about residential contamination of air, soil, and water.

Other contributions to the development of the care plans included experience with other environmental health projects in which the UCLA Environmental/Occupational Medicine unit participated, and conversations with environmental health nurse leaders. The information obtained from these experiences was synthesized and organized into the format of nursing care plans.

Environmental health concerns were divided into four categories, by types of concern:

- Physiological.
- Behavioral.
- Emotional.
- Knowledge deficit.

The categorization helps the nurse identify various types of concerns that need to be addressed in community exposure situations.

NURSING CARE PLANS

Four nursing care plans were developed. Each care plan focuses on a different aspect of the human response to an environmental hazard including physiological, behavioral, and emotional. Knowledge deficit regarding environmental health also is addressed in a separate care plan because of the key role information plays in human responses. Common problems in each category are introduced and discussed. Assessment guidelines, lists of relevant potential NANDA nursing diagnoses, interventions, and evaluation criteria are included.

Physiological Concerns and Symptoms Associated with Community Environmental Health Concerns

These nursing care plans are focused on the individual client. Because the client is a member of a community of concerned persons, the plans indicate means to explain community concerns to the individual client and to use community resources as appropriate. Although not the focus of these four plans, nurses also can play important roles in communicating with the community partner

TABLE 1
Differences Between Community and Occupational Environmental Health Exposure Situations

	<i>Community</i>	<i>Occupational</i>
Who is at risk	Geographically defined	Defined by employment history
Information about exposure	Often poorly defined	Better defined, often with industrial hygiene measures
Susceptible persons	Common	Unusual
Identification of at risk persons	Imprecise	More precise
Level of exposure	Generally low	Often higher

as a separate client entity. The most obvious environmental health concerns are those related to physiological symptoms. At the Del Amo/Montrose Environmental Health Clinic, a majority of clients stated their own health problems motivated them to seek care through the clinic. While not measured directly, anecdotal experience reflected that a number of people knew about the clinic and potential chemical exposure for over a year. However, these individuals did not come to the clinic until they experienced worrisome symptoms.

Physiological environmental health concerns cover a broad spectrum. Table 2 lists appropriate assessments, nursing diagnoses, plans/interventions, and evaluations. Concerns range from specific and serious health problems (cancer, asthma) to less well defined entities such as skin problems and fatigue. The nurse needs to determine if the problems are related to an environmental exposure by careful assessment of the situation, including assessment of both the individual's factors and the community exposure factors.

Stress response to the threat of environmental contamination also may cause physiological symptoms (Bowler, 1994; Dayal, 1994; Neutra, 1991). Stress response symptoms can be similar to nonspecific environmental symptoms such as skin problems and fatigue. Again, thorough and thoughtful assessment by the nurse is necessary.

Sensitivity is required when exploring the cause of physiologic health complaints. Community members may believe that exploring non-environmental causes of

TABLE 2
Nursing Care Plan: Physiological Concern

Assessment	Nursing Diagnoses	Plan/ Interventions	Evaluation
Symptom history (focus on those relevant to exposure)	Potential for injury related to exposure	Identify potential irritant/toxic agent (e.g., from county or state health departments)	Irritant or toxin identified or removed?
Exposure history (e.g., history of contact with soil, water, or other sources of exposure)	Fatigue	Identify exposure pathway and obtain a risk assessment (Arenson, 1995)	Symptom relieved?
Inspection (for skin rashes, etc.)	Alteration in skin integrity (may increase dose)	Strategize with client how to eliminate or minimize exposure (Sandman, 1986)	Public health or hazard resolved being addressed?
Appropriate physiological testing	Alteration in protection (may increase or decrease exposure)	Administer appropriate screening and/or bio marker tests (e.g., blood lead or DDE levels, spirometry, etc.)	Steps taken to prevent such exposure in the future (e.g., policies, protocols)?
Presence of environmental toxins (amount of materials specific agents involved)		Recommend treatment/further evaluation as appropriate (follow up testing, etc.)	Clear documentation of potential exposure and health for future reference
		Monitor client's health (long term) as appropriate (e.g., blood lead testing every 6 months; arrange for future follow up)	
		Review as part of larger community (e.g., is this agent affecting others?)	
		Collect information in a standardized format.	

their problems is an attempt to deny there is an environmental health threat. The client deserves an explanation of the rationale for the nurse's plan of action.

Another physiological consideration in environmental health is the presence of exposure biomarkers. A biomarker is a biologic indicator of exposure or effect of exposure measured in a bodily fluid or exhaled air (Que-Hee, 1993). Exposed clients may have toxins in their bodies without awareness of any noticeable physiological effect. In this case, known potential for exposure is the only indication to test for a biomarker. A lead screening

program illustrates the use of biomarkers. Blood or bone lead concentrations are specific measures of exposure. Exposure assessment, such as asking what year a child's house was painted or evaluating a client's occupational history, is an important element for helping to determine if a blood lead test should be performed.

Assessment includes evaluating the presence of physiologic problems. In addition, assessment for community environmental health clients involves determining if there are any factors that would increase dosage. For example, alterations in skin integrity may increase

TABLE 3
Nursing Care Plan: Behavioral Concern

Assessment	Nursing Diagnoses	Plan/ Interventions	Evaluation
Barriers to desired behavior (e.g. economic, geographic, etc.)	Noncompliance	Have client participate in planning how to minimize exposure (individual action: e.g., physical avoidance, wash fruits, etc.)	Client taking steps to minimize exposure?
Resources available (e.g., family, social services, etc)	Ineffective coping (denial vs. over-reaction)	Refer for support services as necessary (financial, housing, etc.) (Pope, 1995)	Client taking care of own health?
Cultural aspects of behavior	Alteration in health maintenance (e.g., balanced diet, exercise)	Lobby for needed services/funding (educate client about community action groups)	Client's basic needs being met?
Stress symptoms	Denial	Encourage general health promoting activities (e.g., balanced diet, regular exercise)	Client is making informed decisions?
Health promoting activities (e.g., increasing household cleaning practices)	High risk for injury ("environmental equity" [Soliman, 1993], higher than average risk of exposure)		Resources are available that can meet client needs?
Coping mechanisms (denial vs. over-reaction)		Identify successful coping strategies and encourage these	

the client's dose of toxins if there is contact with soil toxins, etc.

The main intervention for many environmentally related health problems or health threats usually is to minimize exposure. Minimizing exposure is performed on two levels: individual actions and environmental remediation. The nurse and the community members may be involved in both aspects of minimizing exposure. The nurse has a particularly important role in individual efforts to control exposure by helping the individual client understand the need to take personal actions to minimize exposure if necessary. This is discussed in more depth in subsequent sections of this article.

Environmental remediation includes measures that limit the entire community's exposure to the hazard. Such measures include actions such as physically removing the toxins and putting a barrier between the community and the contamination. Other possible interventions include treatments to remove the toxin from the body (e.g., chelation) and treatments to manage symptoms

and/or disease processes. These clinical interventions are unique to specific types of exposures and are not described in detail here. However, depending on the route of exposure, certain common methods can be used. For example, the nurse can teach the client about soil methods such as washing home grown vegetables thoroughly (or not using them).

Behavioral Patterns Related to Community Environmental Health Concerns

In environmental health, the client's behavior related to potential exposure is of primary concern to the nurse. Behavioral concerns are addressed by the nursing care plans shown in Table 3. As mentioned earlier, two main behavioral aspects are important to minimizing exposure: individual action and environmental remediation. Individual action includes activities such as physical avoidance of exposure sources, efforts to remove the toxin, and increasing household cleaning practices. The nurse needs to be aware of the factors surrounding client

TABLE 4
Nursing Care Plan: Emotional Concern

Assessment	Nursing Diagnoses	Plan/ Interventions	Evaluation
"Outrage" factors (Sandman et al, 1986) (most importantly sense of loss of control)	Fear	Encourage client to participate in remediation efforts (in order to restore control)	Client makes positive statements about self/situation, exhibits a positive attitude
Subjective statements about emotions and concerns (assess individual concerns)	Anger	Encourage communication with other community members (create network)	Client is successful in social performances (e.g. holding a job, schoolwork, parenting, etc.)
Emotional stressors (e.g., finances, health, litigation)	Anxiety	Therapeutic listening (nonjudgmental)	Client verbalizes feelings
Cultural expressions of emotions	Powerlessness	Refer for professional counseling if necessary	Client seeks support when needs it (e.g. from family, counselor, religious group)
Social support network (e.g., family, social services, etc.)			

behavior which may include emotional, social, cultural, and economic factors. A client may be concerned about emissions from a local industry, but cannot afford to move. A family's tradition of fishing may be threatened by contaminated waterways or a tradition of raising chickens may be impacted by soil contamination. Denial of a hazard may lead to continuation of dangerous exposure. Thus, the need for thorough assessment and planning of exposure avoidance is essential. Alternatively, the nurse needs to encourage the client not to over-react if a true threat does not exist.

In addition, it is important to emphasize general health maintenance. A healthy body is less susceptible to many environmental insults. Assessment of general health maintenance practices is crucial. This is especially true in populations most likely affected by environmental hazards, such as minorities and low income people (Pope, 1995; Soliman, 1993). In addition to focusing on behaviors related to environmental health concerns, the nurse may need to help the client gain access to resources to meet basic needs.

In attempting to decrease exposure to environmental hazards, the nurse deals with larger issues of "environmental equity." For example, hazardous waste sites are disproportionately located near minority communities (Soliman, 1993). Disadvantaged populations receive disproportionate amounts of exposure. Thus, behavioral concerns also may include consideration of community and political activism. The nurse may act as a role model, advocating for the disadvantaged community

partner while showing community members how to advocate for themselves (Pope, 1995).

Ineffective coping mechanisms related to environmental health hazards can lead to unhealthy behaviors in dealing with environmental related problems. Additionally, the individual may have difficulty coping with problems in other areas of life.

Emotional Responses to Community Environmental Health Concerns

A nursing care plan for working with clients with emotional concerns is provided in Table 4. Revelation of and inquiry into community environmental health hazards can evoke strong emotional responses. This is so common that researchers have identified the factors that can influence the public's emotional response in such situations. These factors have been termed as "outrage" factors and are related to the risk perceived by the public (Arenson, 1995; Sandman, 1986). Risk is perceived as greater with each of the following characteristics:

- Involuntary.
- Unfamiliar.
- Uncontrollable.
- Controlled by others.
- Unfair.
- Memorable.
- Fatal, delayed.
- Artificial.
- Undetectable (Arenson, 1995).

Other factors may contribute to perceived risk in spe-

TABLE 5
Nursing Care Plan: Educational Needs

<i>Assessment</i>	<i>Nursing Diagnoses</i>	<i>Plan/ Interventions</i>	<i>Evaluation</i>
Knowledge of basic environmental health principles and specific situation (see plan)	Knowledge deficit	Explain basic environmental health principles (e.g. exposure pathways, variability in susceptibility, etc.)	Demonstrates knowledge of environmental health principles? (e.g., Does client know whether drinking water supply is a concern locally?)
Educational level/ developmental stage of learning (keep it simple)	Potential for injury related to knowledge deficit (e.g., will continue to eat unwashed vegetables even if soil is contaminated)	Educate about toxicology of chemical of concern and steps to be taken in regards to specific environmental health hazard	Aware of the specific, local environmental health concerns and how to minimize exposure as necessary? (can give precautions he/ she should take)
Language best understood by client		Explain importance of dose in determining risk	Expresses understanding of individual risk assessment? (e.g., Is client's exposure higher or lower than those of other community members?)
		Discuss with client individual risk assessment (e.g., personal risk of specific future diseases)	Can name information resources?
		Provide culturally sensitive education in appropriate language (both written and oral formats)	Can client identify which disease(s) may be caused by the chemical agent and which are never related?
		Encourage client to ask questions and to seek answers; inform client about resources (e.g., library, Poison Control Center, etc.)	

cific situations. However, those characteristics are commonly associated with enhanced emotional response of community exposures to environmental contamination. Therefore, community environmental health threats are more likely to induce severe emotional responses. Conversely, the threat of injury from motor vehicle accidents is perceived as less threatening because it is familiar and immediate. Clients also are less emotionally affected by threats they personally chose (e.g., downhill skiing).

Community environmental health threats are viewed as "exotic" because the chemical cannot be visualized.

Other factors to consider in community exposure are the emotional stressors evoked by residential relocation, loss of property value, and litigation pressure (Ostry, 1993). Again, the nurse must carefully identify the actual concerns of each individual client.

One particularly effective intervention in dealing with such emotional upheaval is to increase the community

TABLE 6
Useful Resources for Community Environmental Health Concerns

Environmental Health Resources	Community Contacts
Agency for Toxic Substances and Disease Registry 1600 Clifton Rd., N.E. Atlanta, GA 30333 (404) 639-6360 Environmental Protection Agency 401 M St., SW Washington, D.C. 20460 (202) 260-2080 State/county health departments Environmental health research centers (e.g., universities) Occupational health resources National Institute for Occupational Safety and Health 1600 Clifton Rd. Atlanta, GA 30333 Mail stop D-32 (404) 639-3691	Community organizations Civic groups Schools Ethnic groups Local low cost health care providers Local social service agencies Social advocacy groups Environmental advocacy groups
<p><i>See Pope (1995) for a more comprehensive list of available environmental health resources.</i></p>	

members' involvement in mitigation efforts. Many of the outrage factors described above relate to a perceived lack of control. Thus, increasing client control over the situation can help positively direct emotional energies. Active participation in developing individual health care plans is one way to increase the client's feeling of control. Active involvement is related to social support (Bowler, 1994).

The nurse also can encourage participation in community efforts to work with the environmental health situation and to prevent future exposures. The client can become involved with environmental remediation. Community members may be able to attend community meetings, lobby local politicians, and help inform others in the community about potential and actual health concerns. Individuals also may want to get involved in even larger environmental health issues, such as industrial waste regulations and land allocation.

Educational Needs in Community Environmental Health Concerns

Knowledge deficits are common in environmentally affected communities. Stress related symptoms may decrease with increased knowledge. Feelings of empowerment and esteem can improve with increased knowledge. Health promoting activities can be encouraged with increased knowledge. Specifics related to meeting educational needs are provided in Table 5.

The intake interview process at the Del Amo/Monrose Clinic allowed for the client to indicate desire for additional information. Many clients were concerned about issues not directly related to a current health complaint, but to the future. Common concerns were related to children's health and future cancer risk. Aubin (1994) studied participants in a clinic established in response to PCB (polychlorinated biphenyl) exposure. Researchers found there was considerable interest in learning about future effects, rather than a sole focus on current problems.

Education may be the main intervention available to deal with concerns. Clients need to understand the basis for environmental health effects and interventions. This is also the case when the effects of the potential exposure are partially unknown. For example, the combined impact of multiple and varied exposures over a lifetime may be impossible to predict. Also, much of what is known about the effects of toxic exposures are from laboratory testing and occupational studies. The differences in community exposure may limit the application of previous research. In addition to explaining what is known, the nurse also must carefully explain the limits of current knowledge and why such limitations exist. This helps prevent clients from receiving and believing incorrect information.

The basics of environmental health must not be overlooked during client education. The nurse needs to ensure that the client understands exposure pathways,

variation in susceptibility, the effects of dosage, as well as the specifics surrounding individual exposure prior to discussing specific exposure minimizing recommendations and communicating individual health risk (Brooks, 1995; Lipscomb, 1994; Neuffer, 1994).

ROLE OF NURSING CARE PLANS

Nursing care plans are integral to professional care regardless of the role the nurse is assuming. Established care plans and protocols already exist for many disease processes and some chemical exposures. These should be used when appropriate. Although much variation of potential community environmental health hazards exists, there are distinctive common issues in community environmental health hazards. By definition, these are not isolated incidents or concerns. Thus, when developing a client's plan of care, both individual and community issues need to be addressed. The general care plans presented can be modified for specific exposure concerns and integrated with existing protocol.

Nurses must play a major role in responding to community environmental health concerns. Some aspects of care for such clients may require specialized technical knowledge. However, with proper nursing care plans, nurses can provide appropriate care for clients with whom they work. The plans serve as guides to practice. To effectively implement these plans, nurses need to collect necessary information about the exposures in the specific situation. For example, if the concern is about a specific chemical (such as mercury or DDT), the nurse needs to become familiar with the possible effects of the specific agent.

The nursing process is applicable across all nursing practice, and nursing care plans are tailored to meet various client needs. Nurses inexperienced in environmental health can easily access the appropriate specialists with the skills and knowledge needed in a particular situation. Nurses with advanced education in these areas can serve as valuable resources. Many other resources (see Table 6) also are available to assist nurses in gaining skills and knowledge to work with environmental health problems.

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IN SUMMARY

Community Environmental Health Concerns and the Nursing Process Four Environmental Health Nursing Care Plans.

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1. Many clients have concerns about environmental exposures.
2. Nursing care plans can be adapted to guide practice related to environmental health issues including physiologic, behavioral, emotional concerns, and educational needs.
3. Experience and education in counseling, along with sensitivity to client needs and beliefs, make nurses particularly valuable members of the environmental health team.

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