Evidence-Based Practice for Symptom Management in Adults With Cancer: Sexual Dysfunction

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Purpose/Objectives: To provide a systematic review in relation to evidence-based practice for the management of sexual dysfunction in adults with cancer and to define the current state of knowledge about intervention for this symptom, the gaps and barriers in the current state of knowledge, and recommendations for public education and future research direction.

Data Sources: Articles published from 1980–2000, books, and practice standards.

Data Synthesis: Few tested interventions are available to treat sexual dysfunction in patients with cancer. Those dysfunctions investigated include hot flashes, vaginal dryness, bladder control, and sexual functioning in two breast cancer populations, and psychosocial issues in a remaining few. Many diverse interventions have been reported based on expert opinion and case study.

Conclusions: Although an abundance of literature exists related to the provision of interventions for sexual dysfunction in patients with cancer, few results are from randomized controlled clinical trials. Sexual dysfunction has been addressed extensively in the literature in relation to patients with cancer, but information is needed to ascertain the best assessment strategy and the best intervention, along with appropriate outcome criteria and research design. Description and control of the disease and treatment variables as outcome moderators are needed.

Implications for Nursing Practice: Reliable and valid interventions to promote sexual function are necessary as nurses intervene with patients and their partners. Practice guidelines are available but must begin to be based on research as well as expert opinion. As more research-based intervention information becomes available, clinicians will be able to provide care with greater confidence and certainty.

Key Points . . .

- ➤ Background information is provided related to sexuality, and differences are defined between sexuality and physical sexual performance.
- ➤ Sexual assessment and when it should occur are discussed, and two techniques of sexual assessment are provided.
- ➤ Research instruments related to cancer and sexuality are reviewed; two specific instruments are explained, including their reliability and validity; and eight available research-based intervention studies are discussed.
- ➤ Nonresearch-based intervention articles are reviewed for several types of cancer (breast, colon, genitourinary, gynecologic, head and neck), and general sexuality articles are included.
- ➤ Prospective, longitudinal studies are needed to assess interventions for sexual dysfunction in the cancer population.

Goal for CE Enrollees

To enhance nurses' knowledge of studies reviewing evidence-based practice for sexual dysfunction symptom management.

Objectives for CE Enrollees

On completion of this CE, the participant will be able to

1. Discuss methodologies used in analysis of evidence-based practice for symptom management of sexual dysfunction.
2. Discuss some limitations acknowledged in the studies reviewed for the analysis.
3. Discuss current state-of-the-science conclusions about evidence-based practice for symptom management of sexual dysfunction.

A cancer diagnosis can produce biomedical and psychosocial consequences such as the loss or decreased function of body organs, weakness and debilitation, energy reduction, altered body image, social isolation, and unanticipated demands on time and finances. All of these factors can and do affect patients' sense of self, often leading to an altered or diminished sexual self-concept (Bruner & Boyd, 1999; Spiegel & Diamond, 1998). Because human beings are sexual from the time of birth until their death, we have learned to accept the fact that sexuality is an inherent and important

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aspect of being human. Consequently, especially in the past decade, we have begun to treat sexuality changes and concerns related to cancer treatment with increased commitment and care. As nurses intervene with patients and their partners, employing reliable and valid interventions is important. Nurses can accomplish this by examination of best evidence and providing patient care according to evidence-based practice. A goal of this article is to present the state-of-the-science knowledge in managing sexual dysfunction in patients with cancer. According to its title, this article focuses on "dysfunction." Perhaps after closely reviewing the best-evidence literature for the management of this symptom, one's focus will begin to shift to sexual "function."

Hughes (1996) defined sexual dysfunction as "the inability to express one's sexuality in a manner that is consistent with personal needs and preferences" (p. 1597). This disruption may manifest itself through a decreased body and sexual self-image (i.e., "sexuality" or a person's masculinity and femininity), which can lead to a reduction in the frequency of sexual activity, sexual arousal, and satisfaction (i.e., "physical sexual performance"). Differentiating between sexuality and physical sexual performance is important. Sexuality may be influenced negatively and physical sexual performance may be altered, but neither can be destroyed by cancer if clinicians help patients to focus on who they are as men or women and to modify the meaning of physical sexual performance.

Sexual drive draws human beings together for biologic reproduction, but sexuality goes far beyond this. It influences behavior, speech, appearance, and many other aspects of life. Sexuality brings people together to give and receive physical affection. Although sexual intimacy is important, it is not the only form of intimacy. For many, sexual intimacy is not an available or desired form of closeness. A close friendship or a loving grandparent-grandchild relationship can provide rewarding opportunities for nonsexual intimacy. Because cancer and its treatment can prevail upon sexual intimacy or a close friendship and impair self-esteem and relationships, it is imperative that clinicians assess for and intervene to prevent and manage sexual dysfunction related to cancer.

Patients with any type of cancer can experience sexual dysfunction; therefore, this review will use a biopsychosocial model to ascertain which interventions are used most often according to the biologic process of cancer, the effects of treatment, and the emotional and psychological responses to cancer. Biologically, patients can suffer anatomic changes such as amputation of a limb or breast, facial alterations and scars, or ostomies. A direct effect on the sexual response cycle can be caused by pelvic surgery or irradiation of the genitals, the bladder, the colon, or the neurovascular pathways. Physiologic changes caused by hormonal manipulation may cause premature menopause and estrogen deficiency, resulting in loss of lubrication and dyspareunia in women. In men, they can cause testosterone deficiency, resulting in a decrease in or loss of erection. Chemotherapy can cause weakness, fatigue, nausea, vomiting, diarrhea, hair loss, skin changes, and weight gain secondary to medications such as tamoxifen. Decreased or lost fertility can result from all forms of cancer treatment (Auchincloss, 1991; Dobkin & Bradley, 1991).

Psychosocially, patients may experience loss of desire from negative emotional states such as anxiety, depression, anger, despair, and sadness. Other causes of stress may include loss of personal control over bodily functions, decreased body image and attractiveness, fear of rejection, role strain, and poor communication (Shell, 1998). Realizing that these emotions are directly related to decreased desire and sexual dysfunction is important (Auchincloss, 1991; Dobkin & Bradley, 1991; Meyerowitz, Desmond, Rowland, Wyatt, & Ganz, 1999; Monga, 1995).

Prevalence of Sexual Dysfunction Relevant to Cancer

The extent and nature of sexual problems in patients with cancer vary, but studies have reported sexual dysfunction prevalence ranging from 20%–100% (Derogatis & Kourlesis, 1981; Ganz, Rowland, Desmond, Meyerowitz, & Wyatt, 1998; Kaplan, 1992; Monga, 1995; Rowland & Massie, 1996; Schover, Evans, & von Eschenbach, 1987; Schultz, Van de Wiel, Hahn, & Van Driel, 1992). Sexual dysfunction in patients with cancer is not limited to cancers of the genital organs or the breast. Other cancers that result in cosmetic changes (e.g., bone, head and neck) or general debilitation (e.g., lymphoma, lung cancer) can cause alteration in self-image and dysphoria that may preclude sexual intimacy (Gamba et al., 1992; Monga, Tan, Ostermann, & Monga, 1997; Sarna, 1993).

Because a systematic review in relation to interventions for sexual dysfunction in patients with cancer does not exist in today's literature, a narrow focus on only two or three symptoms or disease sites would be a disservice to practicing clinicians. Therefore, an extensive review has been performed encompassing many cancer sites, both genital and nongenital. The author anticipates that this article will provide useful information for those clinicians in need of intervention resources.

Assessment of Sexual Dysfunction in Patients With Cancer

To provide appropriate management for sexual dysfunction resulting from cancer and its treatment, clinicians acknowledge the need for assessment, although determining when to conduct the assessment can be difficult. If patients are overwhelmed by the cancer diagnosis, are consumed with the fear of dying, or have other problems related to family, deferring in-depth assessment until the crisis passes might be wise. Auchincloss (1989) confirmed this by explaining that ". . . at the time of diagnosis, the patient may be more concerned about the illness and the risk of dying, but worry about the impact of treatment on one's sex life soon follows, often associated with fears of becoming a burden to one's partner and of abandonment" (p. 393). Many clinicians and researchers agree that at least one or two generic questions regarding sexual concerns should be included in the initial history and physical, especially when cancer treatments are likely to cause sexual problems (Andersen, 1990; Auchincloss, 1989, 1991; Bruner & Iwamoto, 1996; Monga, 1995; Schover, Montague, & Lakin, 1997; Shell, 1997; Smith, 1994). Schover et al. (1997) suggested that rehabilitation options related to planned treatment also should be mentioned at least briefly during treatment planning. Not only is assessing for sexual dysfunction at the time of initial diagnosis important, but continued evaluation also is needed during and after treatment (Andersen, 1990; Auchincloss, 1989, 1991; Dudas, 1991; Schover et al., 1997). Providing reassurance that sexual problems can be dis-

cussed and treated at any time helps patients to realize that these issues are as important as being able to cope with surgery or chemotherapy. It indicates, as well, that the practitioner or clinician is capable of and willing to discuss sexual issues.

Clinical Assessment Techniques

Even though clinicians may be willing to incorporate a sexual assessment into the initial and ongoing assessment of their patients, they often have little time to do so. Identification of patients at risk for sexual dysfunction is simplified by the use of a short, but thorough, assessment technique (Anastasia, 1998; Andersen, 1990; Bruner & Iwamoto, 1996). A few questions have been adapted for patients with cancer that clinicians can incorporate into their daily assessments and conversations (McPhetridge, 1968) (see Figure 1). Asking these questions takes little to no extra time as nurses perform a physical examination or administer chemotherapy, and they have been employed by several clinical experts in the field as well (Bruner & Iwamoto; Lamb & Woods, 1981; Waxman, 1993). Although these questions are brief, other barriers to assessment do exist. Privacy in some settings, especially in a chemotherapy infusion room, is difficult to secure. Access to patients is more difficult because of outpatient procedures or short stays. In addition, fewer nurses and more medical assistants currently are caring for patients in both inpatient and outpatient settings. Clinician discomfort with the topic of sexuality also may be a factor; however, this possibly may be alleviated with expanded knowledge about interventions or appropriate referral sources for counseling.

When clinicians do have a longer time interval to spend with patients, a more in-depth assessment using the Activity, Libido/desire, Arousal/orgasm, Resolution, Medical history (ALARM) method will yield more information (see Table 1). Assessment of patients' sexual functioning permits clinicians to individualize the description of possible sexual dysfunctions resulting from treatment (Andersen, 1990). As sexuality information is shared with patients throughout the cancer continuum, a precedent is set for patients to voice future concerns.

Instruments for Research Purposes

Researchers agree that longitudinal assessment, including at pretreatment, provides better and higher quality assessment information. Dobkin and Bradley (1991) asserted that "collecting data on an ongoing basis either before or as soon after treatment as possible and for as long as feasible—i.e., a prospective, longitudinal, repeated-measures design—would be better" (p. 61). They reviewed the literature from between 1980 and 1990 and selected 15 clinical and empirical studies that assessed sexual dysfunction. They found a lack of standardization of instruments among the studies and that only a few of the instruments available for use were developed systematically using statistical techniques to validate them accurately. Bruner and Boyd (1999) reported that many questionnaires exist but no particular all-inclusive or comprehensive questionnaire has emerged to assess sexuality.

The Derogatis Interview for Sexual Functioning (DISF) is a sexual function assessment tool that measures the quality of current sexual functioning in a format that parallels the phases of the sexual response cycle (Derogatis, 1987). It has been used to study sexual function in patients with prostate and head and neck cancer (Monga et al., 1997; Zinreich et al., 1990). It has five domains (Sexual Cognition/Fantasy, Arousal, Behavior/Experience, Orgasm, and Sexual Drive/Relationship), 26 interview items, and female and male versions. A "self-report" version (DISF-SR) also has been designed to be comparable to the DISF interview version. The items are rated on a four-point Likert scale. Internal consistency, test-retest, and inter-rater reliability studies show both the DISF and the DISF-SR to be highly reliable. Construct validity also has been established.

Another instrument, the Sexual Adjustment Questionnaire (SAQ), assesses desire, activity level, relationship, arousal, sexual techniques, and orgasm (Waterhouse & Metcalfe, 1986). It was created to assess the impact of cancer or surgery on sexual function and has been used in many sexual research trials (Bruner, Scott, & McGowan, 1998; Ratliff et al., 1996). The SAQ has 106 items and is divided into sections A, B, and C, with 37, 30, and 39 items, respectively. It is administered at three different points in time. Section A is administered 4–6 weeks after treatment, Section B is administered approximately 2 weeks after Section A, and Section C is administered 16–20 weeks post-treatment. Most responses are rated on a five-point Likert scale and have female and male versions. Content and construct validity have been established. Pearson correlation coefficient was used to determine test-retest reliability on each subsection of the questionnaire. Factor analysis was not reported (Waterhouse & Metcalfe).

Both instruments have been employed in many studies to assess quality of sexual function and produce reliable and

Table 1. ALARM Assessment Method

Action	Question
A = Activity	How frequently do you engage in sexual activity?
L = Libido/desire	Has your sense of desire and/or interest in sexual activity changed and, if so, in what way?
A = Arousal/orgasm	Has your ability to get an erection/become lubricated changed? Are you able to ejaculate/experience vaginal contractions with sexual excitement?
R = Resolution	Do you notice any difference in your sense of a release of tension or sexual contentment?
M = Medical history	Can you briefly describe your history relative to disruption of sexual activity/response?

Note. Based on information from Andersen, 1990.

1. Has having cancer (or its treatment) interfered with your being a mother (father, partner, wife, husband)?
2. Has your cancer (or its treatment) changed the way you see yourself as a woman (man)?
3. Has your cancer (or its treatment) caused any change in your sexual functioning (sex life)?
4. Do you expect your sexual functioning (sex life) to be changed in any way after you leave the hospital (outpatient facility)?

Figure 1. McPhetridge (1968) Assessment Questions

valid data. Both instruments are brief, so patients are more likely to be willing to complete them because of little infringement on their time and energy. The DISF-SR has been well received by patients with cancer presently being studied by the author (newly diagnosed patients with lung cancer). These patients often become quite ill during treatment. They have been willing to participate initially, and most have remained participants over a four-month period of time. Both instruments take less than 15–20 minutes to complete, which is an advantage when patients already may be experiencing the effects of treatment side effects.

Evidence-Based Review for Symptom Management of Sexual Dysfunction

A careful and exhaustive review of the nursing and health-related literature to identify best evidence in relation to interventions to promote sexual function associated with cancer and its treatment identified very few studies of good quality. Databases searched included Cancerlit, CINAHL, Medline, and Psychabstracts from 1980–2000. Only English language articles were considered. Search terms used included sex, sexual, sexuality, and all variations of cancer and neoplasms. After general citations were identified, the terms review articles, meta-analysis, and systematic review were used. No general or systematic review articles or meta-analyses related to management of sexual dysfunction in patients with cancer were found. This fact was corroborated by Leslie Schover, PhD, a clinical psychologist from the University of Texas M.D. Anderson Cancer Center in Houston, TX, and an expert in the field of sexuality. Eight intervention studies with various attributes were found that provided a variety of interventions, both psychosocial and pharmacologic (biologic).

Many nonrandomized studies have documented a problem with sexual dysfunction in the cancer population (Andersen, Anderson, & deProsse, 1989; Blackmore, 1988; Meyerowitz et al., 1999; Monga et al., 1997; Schag et al., 1993; Schover & von Eschenbach, 1985; Stanford et al., 2000). Several of these authors advocate interventions but do not specify the intervention, or they encourage intervention research in general but do not provide definite suggestions.

Because only eight studies included interventions, lower levels of evidence demonstrating causality needed to be explored, including practice guidelines and expert opinion related via journal articles and case studies. Selection of practice guidelines, journal publications, and case studies was made according to the following criteria.

- Publications that addressed a type of sexual dysfunction related to cancer or its treatment
- Publications dated between 1980 and 2000
- Opinion of an expert authority, agency, or committee or a case study
- Evaluated or suggested intervention for the identified sexual dysfunction

One should note that all literature included within this evidence-based article is evaluated according to the Priority Symptom Management (PRISM) Project levels of evidence scheme, from the strongest level of evidence to the weakest level (Ropka & Spencer-Cisek, 2001) (see Table 2). For the sexual dysfunction symptom, no study was found that merited

Table 2. PRISM Levels of Evidence

PRISM Level	Level of Evidence[a]	Evidence Source
I	1	Qualitative systematic review (also called "integrative review") or quantitative systematic review (also called "meta-analysis") of multiple, well-designed, randomized, controlled trials of adequate quality
	2	At least one properly designed, randomized, controlled trial of appropriate size (record if multisite and over 100 subjects, but not required)
	3	Well-designed trial without randomization (e.g., single group pre/post, cohort, time series, meta-analysis of cohort studies)
II	4	Well-conducted, qualitative, systematic review of nonexperimental design studies
	5	Well-conducted case-control study
	6	Poorly controlled study (e.g., randomized controlled trial with major flaws) or uncontrolled studies (e.g., correlational descriptive study, case series)
	7	Conflicting evidence with the weight of evidence supporting the recommendation or meta-analysis showing a trend that did not reach statistical significance
		National Institutes of Health Consensus Reports
		Published practice guidelines, for example, from professional organizations (e.g., Oncology Nursing Society, American Society of Clinical Oncology), healthcare organizations (e.g., American Cancer Society), or federal agencies (e.g., National Cancer Institute, Centers for Disease Control and Prevention)
III	8	Qualitative designs
		Case studies; opinions from expert authorities, agencies, or committees

[a] Levels of evidence range from the strongest evidence at the top to the weakest level of evidence at the bottom.

Note. From "Rating the Quality of Evidence for Clinical Practice Guidelines" by D.C. Hadorn, D. Baker, J.S. Hodges, & N. Hicks, 1996, *Journal of Clinical Epidemiology, 49,* 749–753. Copyright 1996 by Excerpta Medica Inc. Adapted by permission.

a PRISM level I designation. The eight research-based studies and the practice guidelines are all categorized within the PRISM level II designation. The nonresearch-based evidence is placed in the PRISM level III category because it highlights expert opinion and a case study.

Critical Appraisal of Evidence

Research-Based Evidence

Of the eight studies, only three were randomized and one had very few subjects (20 couples). Six were conducted in the 1980s (Cain, Kohorn, Quinlan, Latimer, & Schwartz, 1986; Capone, Good, & Westie, 1980; Christensen, 1983; Houts, Whitney, Mortel, & Bartholomew, 1986; Schover et al., 1986, 1987). The other two were recent studies (Barton et al., 1998; Ganz et al., 2000). Sexuality issues investigated were biologic in one breast cancer study and psychosocial in six studies (using various counseling techniques such as group versus individual), and one study reported biologic and behavioral outcomes. Table 3 presents levels of evidence for each study.

The most recent study was a randomized trial that evaluated hot flashes, vaginal dryness, bladder control, and sexual functioning (Ganz et al., 2000). Seventy-six women treated for breast cancer entered the study and were evaluated over four months; 72 were evaluable at the end of the study. The women were assigned randomly to the intervention group or the usual-care group. Interventions included symptom assessment and management using pharmacologic and behavioral interventions for three target symptoms: hot flashes, vaginal dryness, and stress urinary incontinence. Comprehensive assessment revealed that women who received the intervention improved their sexual functioning and menopausal symptoms ($p = 0.04$ and 0.0004, respectively); however, vitality did not change ($p = 0.77$). This suggests that intervention does lead to improvement in sexual functioning and a reduction in other bothersome symptoms.

The next study was a placebo-controlled, randomized crossover trial that evaluated the use of vitamin E for hot flashes in breast cancer survivors (Barton et al., 1998). The 105 patients who finished the first treatment period showed a similar reduction in hot flash frequencies (25% versus 22%; $p = 0.90$) for the two study arms. A crossover analysis showed that vitamin E was associated with a minimal decrease in hot flashes (one less hot flash per day than with a placebo; $p = 0.05$). At study end, patients did not prefer vitamin E to placebo (32% versus 29%, respectively). Although the results demonstrated a statistically significant reduction in hot flashes among those taking vitamin E, the clinical importance of the difference was minimal. In retrospect, some may question whether hot flashes are truly a sexuality issue. However, hot flashes do cause women to lose sleep and become fatigued, and they signify menopause to many women, which may create femininity issues. In addition, women also can experience them during sexual intercourse, which can cause disruption and be a truly bothersome experience.

Table 3. Research-Based Levels of Evidence

Reference/ PRISM Level	Type of Sexual Dysfunction	N	Disease	Study Design	Intervention
Ganz et al., 2000/ Level 2	Hot flashes, vaginal dryness, bladder control, and sexual function	76	Breast cancer (patient)	Randomized clinical trial	Medications (Bellergal-S®), vaginal lubricants, Kegal exercises, counseling, and education
Barton et al., 1998/ Level 2	Hot flashes	120	Breast cancer (patient)	Randomized clinical trial (crossover)	Vitamin E or placebo
Christensen, 1983/ Level 2	Psychosocial discomfort	20	Breast cancer (couples)	Randomized clinical trial	Treatment (counseling) or control conditions
Schover et al., 1987/ Level 2	Arousal-phase dysfunction, low sexual desire, dyspareunia, anxiety, and depression	384	Genital, colon cancer (patient, couple)	Descriptive, retrospective case series	One or two interview sessions
Capone et al., 1980/ Level 2	Emotional distress and frequency of intercourse	56	Gynecological cancer	Quasiexperimental , nonequivalent control group	Crisis-oriented counseling intervention shortly after diagnosis
Houts et al., 1986/ Level 2	Interpersonal relationship and sexual intercourse	32	Gynecological cancer	Quasiexperimental	Treatment (counseling and education) versus control conditions
Cain et al., 1986/ Level 2	Body image and sexual intercourse	72	Gynecological cancer	Experimental	21 individual treatment (counseling), 22 group, and 29 no treatment control
Schover et al., 1986/ Level 2	Erectile dysfunction and coital or noncoital stimulation	112	Bladder cancer (males)	Descriptive	Sexual counseling

Christensen (1983) evaluated 20 heterosexual couples and the effect of a structured treatment program on psychosocial discomfort following mastectomy. The couples were assigned randomly to treatment and control conditions and were administered an assessment battery before and after treatment that measured change in marital happiness, sexual satisfaction, depression, self-esteem, helplessness, anxiety, alienation, and emotional discomfort. Analysis of variance yielded no significant difference between experimental and control conditions on any of the dependent variables. A supplemental analysis of covariance using the pretest as a covariate revealed that the treatment reduced emotional discomfort and increased sexual satisfaction for both partners and reduced depression in patients. The author recommended further study of the treatment, controlling for the subjects' level of distress prior to treatment.

Of the five remaining studies, one assessed sexual satisfaction outcomes in 118 patients (Schover, 1987). Unfortunately, treatment success was rated by the therapists rather than by the patients themselves. The other four trials evaluated sexual activity and function using various standardized outcome measures (e.g., Profile of Mood States), interview, self-reports, and experimenter-derived multiple-choice questionnaires from 3–12 months post-treatment.

The next strongest level of evidence may be referred to as summary sources. Experts in the field of oncology nursing compiled these sources relative to management of sexual dysfunction. They are the Oncology Nursing Society (ONS)/ American Nurses Association (ANA) *Statement on the Scope and Standards of Oncology Nursing Practice* (Iwamoto, Rumsey, & Summers, 1996), chapters in ONS's *Guidelines for Oncology Nursing Practice* (Hogan, 1991), and the American Cancer Society's (ACS's) *A Cancer Source Book for Nurses* (Barton-Burke, 1997). The ONS/ANA standards primarily provide general sexuality assessment and outcome criteria, and the ONS guidelines and ACS source book include a more extensive description of sexual dysfunction and the interventions to treat this symptom. Although many diverse interventions are reported in these resources, few have been created through evidence-based study. Their PRISM level is II, with level of evidence number 7.

Nonresearch-Based Evidence

The concept of symptom management to rehabilitate sexual function is not restricted to only restoring sexual activity. It is about integrating physiologic symptoms with emotions and creating interventions that affect patients' body image and relationship satisfaction along with physical desires. The following related interventions all stem from expert opinion and case studies, and although this is the weakest level of evidence, it is the best that is available from the experts.

A popular and often applied model for sexual rehabilitation is Annon's (1976) PLISSIT (Permission, Limited Information, Specific Suggestions, and Intensive Therapy) model. Most sexuality experts consider this to be a type of intervention or "counseling" model. Patients progress along the continuum not only according to their own preference for more information but also according to clinicians' knowledge and skill pertinent to the stated problem and patients' progress. This model usually is advocated within general nursing texts on sexuality and cancer. However, some literature refers to the model in relation to specific cancer sites. Eleven references regarding the use of the PLISSIT model are summarized in Table 4. All of the references equate to PRISM level III.

Even though many clinicians use the PLISSIT model for symptom management, it is often a general model without definite biologic or psychosocial interventions. Therefore, if clinicians want precise site-specific interventions, they must return to the literature for further studies or expert opinions. This systematic review details references for specific interventions for sexual dysfunction symptoms related to several of the major cancers, including breast, colon, head and neck, genitourinary (prostate, testicular, bladder), and gynecologic (cervical, uterine, ovarian) cancer (see Table 5). Elaboration on the specific interventions for the sexual dysfunctions mentioned are complex and beyond the scope of this review.

Breast cancer: Women with breast cancer often must face the side effects of chemotherapy or hormone therapy along with their surgical treatment, be it mastectomy or breast-conserving surgery followed by radiation therapy. Along with the effects that may be related to decreased estrogen and androgen levels (e.g., hot flashes, vaginal dryness, dyspareunia, osteoporosis, increased risk for myocardial infarction), other physical effects (e.g., weight gain) and emotional effects (e.g., mood swings, anxiety, depression, irritability, insomnia) can be just as devastating. Both the physical and psychological aftermath can affect the sexual response cycle (i.e., excitement, plateau, orgasm, and resolution), causing the couple to consequently avoid sexual intimacy. Interventions may be derived from behavioral, nursing, medical, and surgical domains. Of the eight articles reviewed pertinent to sexual function in women with breast cancer (Ganz et al., 1998; Kaplan, 1992; Meyerowitz et al., 1999; Renshaw, 1994; Schover, 1991, 1994; Schwarz-Appelbaum, Dedrick, Jusenius, & Kirchner, 1984; Young-McCaughan, 1996), five briefly mention interventions. Suggested interventions range from marital therapy, role playing, and communication training to education and medical management for dyspareunia and hot flashes. Few authors describe precise interventions. The one reference with extensive therapeutic information specific to breast cancer (Schwarz-Appelbaum et al.) includes an entire nursing care plan devoted to sexual symptom management. It is amazing and disappointing to learn that although a large number of studies report on breast cancer and sexuality concerns, no research-based information exists pertaining to symptom management.

Colon cancer: Colon cancer is one of the most prevalent malignancies in both men and women; however, little research addresses this population's sexuality issues. Much of the recent intervention information appears in articles about sexuality or general sexual dysfunction or in cancer nursing textbooks. Side effects from required surgery can be particularly devastating to men with regard to erectile function, whether a colostomy is performed or not. Very little is known about the surgical impact on female sexual response. However, Sprangers, Taal, Aaronson, and te Velde (1995) reported that patients with stomas have higher levels of psychological distress, more restrictions in social functioning, and greater impairment in sexual functioning. Eleven references regarding sexuality and colon cancer, sexual dysfunction, and interventions were found (Bell, 1989; Etnyre, 1988; Gloeckner, 1991, 1984; Grunberg, 1986; Penninger, Moore, & Frager, 1985; Shell, 1992; Shipes, 1987; Simmons, 1983; Smith, 1988;

Table 4. PLISSIT Model Intervention Nonresearch-Based Evidence

Reference	Disease Site/ Topic	How PLISSIT Model Is Used	Intervention Category
Schain, 1980	General/Sexual functioning	Model recommended as intervention/ interaction technique	Small amount of information; general suggestions
MacElveen-Hoehn, 1985	General/Sexual assessment and counseling (case study)	Model used to illustrate levels of sexuality counseling	Extensive information; many specific suggestions
Cooley et al., 1986	Hodgkin's disease/ Women	Model used to create nursing care plan for education, counseling, and symptom management	Extensive information; many specific suggestions
Grunberg, 1986	Ostomy surgery/ Rehabilitation	Model used in a hospital team approach for education and counseling	Moderate amount of information; some specific suggestions
Shipes, 1987	Ostomy surgery/ Rehabilitation	Model used as an effective counseling method and to create nursing care plan	Extensive amount of information; many specific suggestions
Turnbull, 1989	Ostomy surgery/ Rehabilitation	Model used to progressively help patients resolve sexuality issues	Small amount of information; few specific suggestions
Smith, 1989	General/Sexual rehabilitation	Model used as example to initiate discussion of sexual concerns	Small amount of information; few specific suggestions
Gloeckner, 1991	Ostomy surgery/ Rehabilitation	Model used to provide education and counseling	Small amount of information; general suggestions
Dudas, 1991	General/Rehabilitation for patient with cancer; sexuality mentioned	Model recommended to manage sexual issues for patients with cancer	Description of model only; no suggestions
Waxman, 1993	Prostate/Interventions for sexual dysfunction following treatment	Model used to promote therapeutic intervention; timing and outcome reported	Small amount of information; few specific suggestions
Hughes, 1996	General/Sexuality issues	Model recommended to manage sexual issues for patients with cancer	Moderate amount of information; some specific suggestions

Turnbull, 1989). Four contain detailed information to assist the practitioner in symptom management. Interventions cover sexual health knowledge, communication skills, nursing management (e.g., deodorize the pouch, use opaque pouch covers, suggest alternative sexual positions, advise use of vaginal lubricants), medical/surgical management (e.g., penile prosthesis), and dispelling sexual myths. Two articles particularly address the additional concerns faced by gay and lesbian patients, and one makes specific reference to this population (Etnyre; Shell, 1992; Smith, 1988). However, very few references in the nursing, psychosocial, or medical literature address gay and lesbian issues related to other types of cancer.

Genitourinary cancer: Genitourinary cancers and their treatments in men affect sexual identity and body image and will directly or indirectly affect the sexual organs and sexual functioning. Men can have surgery such as prostatectomy, cystoprostatectomy, orchiectomy with possible retroperitoneal lymph node dissection, or penectomy, all of which will result in a devastating impact on their sense of masculinity, either temporarily or permanently. Other treatments such as chemotherapy and radiation therapy can be just as devastating physiologically to the sexual response cycle, and, although orgasm is not as frequently affected, the impact on erection, emission, and ejaculation can impair self-esteem and a man's sense of masculinity. To facilitate optimal adjustment and sexual rehabilitation, support and advocacy are essential throughout the use of the best evidence-based interventions. Including the spouse or partner is particularly important, especially if both are interested in maintaining their intimate or physical relationship via intercourse or other alternatives. Many of the nine reviewed references recommend offering information about the physical ramifications along with practical advice about how to deal with the expected changes to both patient and partner (Bachers, 1985; Ofman, 1993; Rieker, 1996; Schover, 1987; Schover & Fife, 1985; Schover & von Eschenbach, 1984; Smith & Babaian, 1992; Stanford et al., 2000; Waxman, 1993). Three publications had succinct and immediately useful information, whereas the other six provided general information pertaining to counseling and referral, support and communication, nursing and medical management, education, and resources.

Gynecologic cancer: The female sexual response cycle will be affected during treatment for gynecologic cancers if the structure or innervation of the clitoris or the vagina is influenced. Many women become quite apprehensive once they

Table 5. Expert Opinion and Case Study Levels of Evidence (Nonresearch-Based Evidence)

Reference	Disease Site/ Topic	Intervention Addressed	Intervention Category
Swartz-Appelbaum et al., 1984	Breast/Nursing care plans	Symptom management (pharmacologic and nonpharmacologic), education, and counseling	Extensive information and many specific suggestions
Schover, 1991	Breast/Body image and intimate relationships	Counseling	Moderate amount of information and elements of brief counseling
Kaplan, 1992	Breast/Sexual side effects of treatments	Symptom management (pharmacologic and nonpharmacologic) and counseling	Moderate amount of information and several specific suggestions
Renshaw, 1994	Breast/Emotional adjustment and sexual symbols	Symptom management (nonpharmacologic) and counseling	Small amount of information and some specific suggestions
Schover, 1994	Breast/Sexuality and body image in younger women	Symptom management (pharmacologic and nonpharmacologic)	Small amount of information and few specific suggestions
Young-McCaughan, 1996	Breast/Sexual functioning	Symptom management (pharmacologic) and education	Small amount of information and some specific suggestions
Ganz et al., 1998	Breast/Sexual functioning and quality of life	Symptom management (pharmacologic) and education	Small amount of information and some specific suggestions
Meyerowitz et al., 1999	Breast/Sexuality after breast cancer	Counseling	Small amount of information and general suggestions
Simmons, 1983	Colon/Patient-to-patient advice	Symptom management (nonpharmacologic), education, and counseling	Moderate amount of information and several specific suggestions
Gloeckner, 1984	Colon/Sexual attractiveness after ostomy surgery	Education	Small amount of information and general suggestions
Penninger et al., 1985	Colon/Sexuality rehabilitation	Symptom management (nonpharmacologic), education, and counseling	Extensive amount of information and many specific suggestions
Grunberg, 1986	Colon/Sexuality rehabilitation	Symptom management (nonpharmacologic), education, and surgical management	Moderate amount of information and some specific suggestions
Shipes, 1987	Colon/Physiologic and psychologic alterations in sexual function	Symptom management (nonpharmacologic), education, and counseling	Extensive amount of information, many specific suggestions, and nursing care plan
Smith, 1988	Colon/Homosexual person with a stoma	Education	Small amount of information and general suggestions
Etnyre, 1988	Colon/Homosexual person with a stoma	Education and counseling	Small amount of information and general suggestions
Bell, 1989	Colon/Overcoming sexual anxieties	Symptom management (nonpharmacologic) and education	Small amount of information and few specific suggestions
Turnbull, 1989	Colon/Sexuality after ostomy surgery	Symptom management (nonpharmacologic) and education	Small amount of information and few specific suggestions
Gloeckner, 1991	Colon/Sexuality perceptions	Symptom management (nonpharmacologic)	Small amount of information and general suggestions
Shell, 1992	Colon/Psychosexual impact of ostomy surgery	Symptom management (nonpharmacologic), education, counseling, and surgical management	Extensive amount of information and many specific suggestions
Metcalf & Fischman, 1985	Head and neck/Factors affecting sexuality	Symptom management (nonpharmacologic), education, and counseling	Small amount of information and few specific suggestions

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Table 5. Expert Opinion and Case Study Levels of Evidence (Nonresearch-Based Evidence) *(Continued)*

Reference	Disease Site/ Topic	Intervention Addressed	Intervention Category
Hoehm & McCorkle, 1985	Head and neck	Symptom management (nonpharmacologic) and education	Small amount of information and few specific suggestions
Schover & von Eschenbach, 1984	Genitourinary (testicular)/Sexual and marital counseling	Counseling and education	Small amount of information and some specific suggestions
Bachers, 1985	Genitourinary (prostate, bladder, penile, testes)/Sexual dysfunction after treatment	Counseling, education, and surgical management	Small amount of information and some specific suggestions
Schover & Fife, 1985	Pelvic or genital/Sexual counseling	Counseling, education, and symptom management (nonpharmacologic)	Extensive amount of information and many specific suggestions
Schover, 1987	Genitourinary (prostate, bladder, testes, penis/urethra) (male and female)/Sexuality and fertility	Symptom management (nonpharmacologic)	Small amount of information and few specific suggestions
Smith & Babaian, 1992	Genitourinary (prostate, testes, bladder, penis)/Effect of treatment on sexuality	Symptom management (nonpharmacologic), education, counseling, and surgical management	Moderate amount of information and several specific suggestions
Ofman, 1993	Genitourinary (prostate, bladder, testes, penis)/Sexual implications of genitourinary cancer	Education	Small amount of information and general suggestions
Waxman, 1993	Prostate/Assessment and interventions for sexual dysfunction	Symptom management (nonpharmacologic) and education	Small amount of information and few specific suggestions
Rieker, 1996	Testicular/How to counsel and available information	Counseling and education	Small amount of information and few specific suggestions
Stanford et al., 2000	Prostate/Antiandrogen therapy and side effects	Education and counseling	Small amount of information and general information
Seibel et al., 1980	Cervix/Sexual function	Education	Small amount of information and general suggestions
Springer, 1982	Vulva/Sexual implications after radical vulvectomy	Counseling and education	Small amount of information and few specific suggestions
Wabrek & Gunn, 1984	Gynecologic malignancies/ Sexual implications; nursing care plans	Symptom management (nonpharmacologic), education, and counseling	Extensive amount of information and many specific suggestions
Hubbard & Shingleton, 1985	Cervix/Sexual function after cervical cancer	Symptom management (nonpharmacologic) and education	Moderate amount of information and some specific suggestions
Schover & von Eschenbach, 1985	Cystectomy/Sexual function and radical cystectomy	Symptom management (nonpharmacologic), counseling, and education	Extensive amount of information and many specific suggestions
Jenkins, 1986	Pelvic irradiation/Sexual healing	Symptom management (nonpharmacologic) and education	Moderate amount of information and some specific suggestions
Richards & Hiratzka, 1986	Pelvic irradiation/Vaginal dilation; patient-education tool	Education	Extensive amount of information and many specific factors
Schover & Fife, 1985	Pelvic or genital/Sexual counseling	Counseling, education, and symptom management (nonpharmacologic)	Extensive amount of information and many specific suggestions
Andersen, 1987	Gynecologic/Sexual functioning complications	Symptom management (pharmacologic and nonpharmacologic), education, and counseling	Moderate amount of information and some specific suggestions

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Table 5. Expert Opinion and Case Study Levels of Evidence (Nonresearch-Based Evidence) *(Continued)*

Reference	Disease Site/ Topic	Intervention Addressed	Intervention Category
Wallace, 1987	Vulva/Sexual adjustment after surgery	Symptom management (nonpharmacologic), education, and counseling	Moderate amount of information and some specific suggestions
Jenkins, 1988	Gynecologic/Sexual changes after treatment	Education	Small amount of information and general suggestions
McKenzie, 1988	Cervix/Sexuality after pelvic exenteration	Symptom management (nonpharmacologic), education, and counseling	Moderate amount of information and some specific suggestions
Andersen, 1989	Gynecologic/Sexual functioning	Symptom management (nonpharmacologic) and education	Small amount of information and few specific suggestions
Feldman, 1989	Ovarian failure/Caused by cancer treatments; interventions and educational plan	Symptom management (pharmacologic, nonpharmacologic), education, and counseling	Extensive amount of information and many specific suggestions
Schover et al., 1989	Cervix/Sexual dysfunction after treatment	Education and counseling	Small amount of information and general suggestions
Lamb, 1990	Gynecologic/Psychosexual issues	Symptom management (nonpharmacologic), education, and counseling	Extensive amount of information and many specific suggestions
Grier, 1992	Gynecologic/Sexuality implications (self-help tip sheet)	Symptom management (nonpharmacologic) and education	Extensive amount of information and many specific suggestions
Lamb, 1995	Gynecologic/Cancer effects on sexuality	Education, counseling, and symptom management	Small amount of information and general suggestions
Andersen, 1996	Gynecologic/Treating sexual difficulties	Symptom management (nonpharmacologic), education, and counseling	Moderate amount of information and some specific suggestions
Ratliff et al., 1996	Vaginal reconstruction/Sexual adjustment	Education and counseling	Moderate amount of information and some specific suggestions
Schain, 1980	General/Sexual function	Education	Small amount of information and general suggestions
Derogatis & Kourlesis, 1981	General/Evaluation of sexual problems	Education and counseling	Small amount of information and general suggestions
Fisher, 1983	General/Psychosexual effects of cancer and its treatment	Symptom management (nonpharmacologic), education, counseling, and surgical options	Moderate amount of information and some specific suggestions
MacElveen-Hoehn, 1985	General/Sexual assessment and counseling; case study	Symptom management (nonpharmacologic), education, and counseling	Extensive amount of information and many specific suggestions
Schain, 1988	General/Sexual interview; model P-L-E-A-S-U-R-E introduced	Symptom management (nonpharmacologic), education, and counseling	Moderate amount of information and some specific suggestions
Smith, 1989	General/Sexual rehabilitation	Education and counseling	Small amount of information and general suggestions
Auchincloss, 1991	General/Sexual dysfunction after treatment	Counseling and education	Extensive amount of information and many specific suggestions
Burbie & Polinsky, 1992	General/Restoring sexuality and intimacy; case examples	Counseling	Small amount of information and few specific suggestions

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Table 5. Expert Opinion and Case Study Levels of Evidence (Nonresearch-Based Evidence) *(Continued)*

Reference	Disease Site/ Topic	Intervention Addressed	Intervention Category
Monga, 1995	General/Sexuality in patients with cancer	Education, counseling, and medical management	Moderate amount of information and some specific suggestions
Smith, 1994	General/Sexuality in patients with cancer	Education and counseling	Small amount of information and few specific suggestions
Shell, 1995	General/Self-image and sexuality	Symptom management (nonpharmacologic) and counseling	Small amount of information and few specific suggestions
Hughes, 1996	General/Sexuality issues	Symptom management (nonpharmacologic), education, and counseling	Small amount of information and few specific suggestions

undergo surgery, chemotherapy, or radiation therapy. They may experience a sense of lost femininity, concerns about how their genital anatomy will appear, concerns about whether they can comfortably participate in sexual intercourse, and fears related to physical aging, diminished libido, orgasmic potential, and lost fertility. Fortunately for the gynecologic cancer population, an abundance of information exists with respect to interventions for sexual dysfunction caused by cancer treatment. Twenty intervention references were identified, 10 of which contained a moderate to extensive amount of clinical information (Andersen, 1987, 1989, 1996; Feldman, 1989; Grier, 1992; Hubbard & Shingleton, 1985; Jenkins, 1986, 1988; Lamb, 1990, 1995; McKenzie, 1988; Ratliff et al., 1996; Richards & Hiratzka, 1986; Schover & Fife, 1985; Schover, Fife, & Gershenson, 1989; Schover & von Eschenbach, 1985; Seibel, Freeman, & Graves, 1980; Springer, 1982; Wabrek & Gunn, 1984; Wallace, 1987). Even though more has been written about female genital cancers, very few, if any, of the recommended interventions are based on research evidence.

Head and neck cancer: Head and neck cancer can be a most devastating experience to a patient, particularly in relation to body image and sexuality because the disease's ramifications often are immediately recognizable. Frequently, these patients also must undergo facial reconstruction to correct major defects. This type of rehabilitation often is disappointing because patients expect to look like they did before the disease was diagnosed. Even though head and neck cancer accounts for only about 10% of cancer diagnoses (less in women), its impact on a person's sense of masculinity or femininity is tremendous. Its relatively low incidence may be one reason why the cancer literature contains so few citations related to sexual dysfunction interventions for this population. Researchers may hesitate to conduct sexuality studies in patients who already are struggling with life's most basic needs such as breathing and swallowing. Of the two articles that do address sexual functioning in patients with head and neck cancer, only one is written specifically for this population, and few interventions are mentioned (Hoehm & McCorkle, 1985; Metcalf & Fischman, 1985).

General Sexuality and Cancer Publications

Many journals include an abundance of information regarding interventions for sexual rehabilitation after a cancer diagnosis and its treatment, but the information is not site-specific. These sources also must be included in this review because they either provide different or more in-depth information or they comment about specific recommendations already reviewed. Four of the 13 journal articles furnish models, guidelines, and other specific counseling techniques and nursing interventions (Auchincloss, 1991; Burbie & Polinsky, 1992; Derogatis & Kourlesis, 1981; Dudas, 1991; Fisher, 1983; Hughes, 1996; MacElveen-Hoehn, 1985; Monga, 1995; Schain, 1980, 1988; Shell, 1995; Smith, 1989, 1994) (see Table 5).

Public Education

Two booklets written specifically for female and male patients with cancer seeking more information about sexuality and cancer also can be helpful to clinicians in need of such a resource (Schover, 2001a, 2001b). These booklets recently were updated and now include interventions related to newer methods of treatment, which create different or more intense sexual side effects that can occur at various times during and after treatment. Although these booklets are very helpful, they provide only general information and overlook several troublesome cancers such as lung cancer and leukemia.

The United Ostomy Association also recently revised its sexuality booklets and created one booklet for all ostomates. *Intimacy, Sexuality, and an Ostomy* (Turnbull, 2001) is written by a nurse and provides excellent information for ostomates, but its content is not specific to cancer-related ostomies.

Although clinicians currently do not have interventions based on research evidence for patients with cancer dealing with sexuality issues and concerns, expert opinions are available and consideration should be given to revising and creating more specific and up-to-date literature for patients and their partners. Once this is accomplished, practitioners and clinicians will have appropriate literature to make available to patients and their partners after preparing them with verbal instruction. These tools not only could serve as pragmatic information for the public but also could assist novice clinicians in communicating this sensitive material effectively and comfortably.

Future Research Direction

Future study has been assisted by the advances already reported concerning the definition of sexual dysfunction and the numerous interventions available to treat this symptom in

patients with cancer. Publications within the scope of this systematic review revealed the wide range of sexual dissatisfaction that currently exists and that some important questions already have been studied and partially answered. Some of the publications asked relative questions—What sexual difficulties develop? Which patient characteristics relate risk for developing sexual dysfunction? What factors contribute to sexual dysfunction? When do sexual problems develop? Although researchers currently have a better understanding of the sexual difficulties experienced by patients with cancer, interventions based on research are necessary to ensure optimal care.

This extensive literature review covering the past 20 years revealed consistent agreement among experts in the field regarding the need for interventions related to clinical symptom management, education, and counseling. When specific interventions are reported, many later publications often elaborated on or added to previous literature. Disease-specific as well as general cancer publications addressing sexuality issues all indicated that interventions are needed, although some have more extensive information than others and present information in different formats (e.g., nursing care plans, case studies, tables, charts). The differences in these publications evolve from their focus—some are clinically oriented whereas others are education based or focus on counseling. Many focus on a combination of all three.

Once research is completed relative to what dysfunctions develop and when and which patients are at risk for developing such dysfunctions, clinicians can concentrate on promoting sexual *function* for patients and their partners. These projects intended to promote sexual function in patients with cancer may begin by examining which kinds or combinations of interventions would be most effective in promoting sexual adjustment. For example, which sexual position promotes the most enjoyable and most comfortable sexual experience and the highest frequency of sexual encounter once patients have been treated for colon, gynecologic, or genitourinary cancer? Should clinicians offer suggestions to add mood enhancers such as a glass of wine, candlelight, music, warm baths together, or mutual massage? Should clinicians suggest the use of erotic materials such as books, videos, or sexual devices? Should clinicians suggest changes in sexual practices and promote alternative methods of loving expression (e.g., add or subtract breast stimulation or types of genital caressing, increase duration of foreplay)? Should patients and their partners have formal sessions with a therapist to address their frightened and anxious feelings, to work on body image and self-esteem, and to assess for depression? Although clinicians often suggest many of these interventions, they do not know if any or all of these actually make a difference in regard to patients' sexual being or intimate relationships.

Other questions related to interventions for sexual dysfunction concern structured medical and psychosocial education, when to perform an intervention, and if the material provided should be specific to a particular point in time. Emotional and physical adjustment usually occur at four time periods—at diagnosis, after surgery, during adjuvant treatment, and during recovery. Is it best to provide intervention during all four phases of adjustment or at one particular time or two? When providing psychosexual counseling, do the sex therapy techniques developed for healthy people provide the appropriate information to patients with cancer and their partners?

Researchers examining interventions for the management of cancer-related sexual dysfunction must consider the patient, assessment strategies, the intended intervention, outcome criteria, and tactical selection of research designs. The role of disease and treatment variables as outcome moderators also will require description and control. Nurses, whether researchers or clinicians, must work together to intervene so that patients with cancer and their partners who may be at risk for sexual dysfunction will get through treatment with their sexuality intact. Today's patients should experience fewer symptoms and have better sexual function as they undergo treatment and survive as spouses, partners, lovers, parents, family members, and friends. As researchers begin to identify interventions based on randomized controlled trials with the appropriate number of subjects, clinicians can provide sound and reliable care with greater confidence.

Presently, there is a severe deficiency of high-level, quality, evidence-based intervention studies in relation to sexual function in patients with cancer. Most evidence currently available is of the lowest level, according to the PRISM schema. This means that clinicians must intervene according to published practice guidelines from ONS and ACS and according to "opinions" from expert authorities, agencies, and committees. Although practice guidelines and expert opinions should not be ignored, oncology nurses are obligated to patients and their partners to use their expertise and knowledge to participate in research that provides accurate, state-of-the-art interventions.

Although the image of cancer and its treatment continues to threaten the sense of worth and competence that underlie the human sexual response, patients' sexuality (who they are as men and women) does not vanish with the diagnosis of cancer. However, patients and their partners will continue to require intervention to employ all of their resources to retain a sense of sexual being and intimate relationship during and after the cancer experience.

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