

American Brachytherapy Society Working Group Report on cancer surveillance, sexual health, and pelvic toxicity management in gynecologic malignancies

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ABSTRACT

PURPOSE: This guideline provides evidence-based recommendations for the follow-up of women after gynecologic radiation therapy, including brachytherapy.

METHODS AND MATERIALS: A panel of members from the American Brachytherapy Society (ABS) performed a review of available literature regarding evidence for the follow-up management of gynecologic radiation therapy patients. A summary of evidence and individual clinic expertise was used to formulate general guidelines for the follow-up management.

RESULTS: This report provides recommendations regarding the frequency of follow-up examination and imaging post-treatment. Here, we also provide recommendations regarding the management of pelvic floor dysfunction and sexual and vaginal health after radiation therapy, specifically brachytherapy. In addition, recommendations are provided regarding vaginal dilators, pelvic floor physical therapy, and estrogen therapy.

CONCLUSION: This working group report provides recommendations for appropriate surveillance of gynecologic patients postradiation therapy, as well as guidance for management of potential pelvic and vaginal toxicities related to treatment. Individual expert opinions are provided on vaginal dilator recommendations. © 2026 American Brachytherapy Society. Published by Elsevier Inc. All rights are reserved, including those for text and data mining, AI training, and similar technologies.

Received 7 January 2026; accepted 16 March 2026

Disclosures: There are no COIs relevant to this project. Shelbie O'Hara has received an honorarium for her work with the Oncology Nursing Society, which is unrelated to this project. Amanda Rivera has received the Winn Career Development Award Grant, Bristol Myers Squibb Foundation, which is unrelated to this project.

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<https://doi.org/10.1016/j.brachy.2026.03.010>

Introduction

Guidance for patients' pelvic, vaginal, and sexual health after radiation therapy, specifically brachytherapy, for gynecologic cancers, is a critical component of high-level clinical care and an area that can be overlooked by providers. Radiation to the pelvis in the form of external beam radiation and/or brachytherapy can lead to late complications, including, but not limited to, pelvic floor dysfunction, premature ovarian insufficiency, and vaginal stenosis (VS), which can have long-lasting impacts on patients' quality of life and sexual health (1–3,4).

This report will summarize available literature and provide guidance for follow-up care of women treated with gynecologic external beam radiation and/or brachytherapy. We will discuss clinical exam and imaging surveillance, assessment of treatment-related toxicity, sexual health after radiation, and long-term complications of radiation to the pelvis/vagina with recommendations for optimization of outcomes.

Methods and materials

Based upon expected variations in institutional and individual practice patterns for patient follow-up, education regarding vaginal dilator use, and the use of hormone/estrogen therapy after radiation, working group recommendations were developed. Gynecologic radiation oncology experts from the American Brachytherapy Society (ABS) performed a review of available literature regarding surveillance recommendations, management of pelvic floor dysfunction, the role of hormone and estrogen therapy, and the frequency, timing, and general use of vaginal dilators. A survey was sent to the gynecologic radiation oncology experts to get a consensus among us, timing, and recommendations of vaginal dilator use among the authors of the manuscript ($n = 12$). Recommendations were developed based upon available evidence and individual clinical expertise. The panel was also surveyed on personal prescribing practices for vaginal estrogen. The report was reviewed and approved by the Guidelines Committee of the ABS.

Results

Follow-up surveillance

Appropriate follow-up after brachytherapy for gynecologic malignancies is essential for early detection and management of tumor recurrences as well as radiation-related toxicities. Most endometrial and cervical cancer recurrences occur within 2–3 years after treatment (5,6). Therefore, after treatment, the Society of Gynecologic Oncology (SGO) recommends pelvic examination every 3–6 months for the first 2 years, every 6–12 months for years 2–5, and annually after year 5 (7). Surveillance Pap testing is not recommended for endometrial cancer patients. Controversy

remains on whether to continue routine Pap testing after definitive radiation therapy for cervical cancer because the incidence of abnormal cytology is reported to be as high as 34% without evidence of recurrent disease, and, therefore, is typically omitted (8–10).

Cervical cancer imaging

The National Comprehensive Cancer Network (NCCN) recommends FDG-PET/CT imaging within 3–6 months after the completion of radiation therapy for cervical cancer (11). A meta-analysis of 11 studies including 1,104 cervical cancer patients demonstrated that a complete metabolic response on PET imaging was associated with significantly improved overall survival and progression-free survival compared to a partial metabolic response (12). There is insufficient data to support the use of routine surveillance PET imaging for cervical cancer after the initially recommended post-treatment PET. Some data suggest asymptomatic recurrences can be detected with routine PET scans, leading to improved survival compared to a symptomatic patient with recurrent cervical cancer (13). Care should be taken to obtain follow-up imaging if the post-treatment PET demonstrates residual abnormal uptake, and consideration for MRI pelvis if necessary (14,15).

Endometrial cancer imaging

The NCCN does not recommend routine imaging for surveillance of endometrial cancer after the completion of curative intent treatment (16). The TOTEM study compared an intensive to a minimalist follow-up regimen for endometrial cancer patients and did not find a statistically significant difference in 5-year overall survival between the two follow-up arms (17). Similar to follow-up imaging for cervical cancer patients, the role of surveillance imaging for locally advanced endometrial cancer patients is not well established and not indicated, although surveillance CT imaging has been reported to detect 15% of endometrial cancer recurrences (18).

ABS recommendations for follow-up surveillance

The authors' recommendation for follow-up surveillance after brachytherapy for gynecologic malignancies includes follow-up appointments with pelvic examinations every 3 months for the first 2 years, followed by every 6 months for years 3–5, and annually thereafter. These appointments can be staggered with gynecologic oncology and radiation oncology or can be solely with gynecologic oncology. Because brachytherapy is often performed at a high-volume tertiary center in a major metropolitan area, it is possible that patients residing in rural areas may be unable to routinely follow-up with their radiation oncology providers. Therefore, telehealth follow-ups are appropriate if these pa-

tients are undergoing pelvic examinations at the frequency described above by their local providers.

Regarding follow-up imaging, we acknowledge there are variations in clinical practice for surveillance imaging. We do not recommend surveillance imaging for FIGO stage I or II type I endometrial cancers unless patients present with concerning symptoms. We recommend that all cervix, vulvar, and vaginal cancer patients undergo PET/CT 3–4 months after the completion of radiation therapy. Imaging for vulvar and vaginal cancer is extrapolated from data for cervical cancer. For patients with high risk of regional or distant metastatic recurrence (FIGO stage III or IV endometrial or cervical cancer; type II endometrial cancers; cervical adenocarcinoma) or those with concerning gastrointestinal (GI) or genitourinary (GU) symptoms, we consider routine surveillance imaging for 5 years after radiation therapy. Imaging of the chest, abdomen, and pelvis (with either CT or PET/CT and consideration for pelvic MRI) should be obtained every 3–6 months for 2 years after brachytherapy completion and then every 6–12 months through year 5 for the aforementioned high-risk patients to monitor for regional or distant metastatic disease.

Toxicity related to treatment

Based on results from the EMBRACE-I study for cervical cancer, the actuarial 5-year cumulative incidence of grade 3–5 GU, GI, or vaginal toxicities is 18.4% after concurrent chemoradiation and MRI-guided adaptive brachytherapy for locally advanced cervical cancer (19,20). A rectal D2cc > 70 Gy EQD23 and an external beam boost to an enlarged lymph node with a V57 Gy > 165 cc significantly increases the risk of grade 3 or higher GI toxicity in locally advanced cervical cancer patients treated with definitive chemoradiation and brachytherapy (21). International Commission on Radiation Units and Measurements (ICRU) bladder point dose and recto-vaginal point doses are documented risk factors for urinary frequency/incontinence and VS, respectively (22,23). Thus, at follow-up visits, patients should be asked if they are experiencing any radiation-related symptoms, including diarrhea, rectal pain, rectal bleeding, urinary frequency, urinary urgency, dysuria, hematuria, stool, or urine output through the vagina, and dyspareunia. Pelvic examination should assess VS and foreshortening. In addition to evaluating patients for acute and late toxicities related to surrounding organs at risk after brachytherapy, it is recommended that an assessment of psychological effects and sexual function be performed. Questionnaires used to evaluate patient-reported outcomes include the European Organization for Research and Treatment of Cancer (EORTC)-Quality of Life Question (QLQ) Core 30 (C30) and the EORTC-QLQ Cervical Cancer Module (CX24) (24,25). While the CTCAE is used to grade physiologic toxicities, the Female Sexual Function Index can be used to evalu-

ate sexual function after radiation. (26,27) The Impact of Events Scale-Revised has been employed to detect acute stress disorder and post-traumatic stress disorder in post-brachytherapy patients (27). These tools have been used to study the incidence of post-traumatic stress disorder after brachytherapy for cervical cancer (28) and quality of life after treatment for endometrial cancer (29).

Pelvic floor dysfunction (PFD) can arise in survivors of gynecologic cancers, particularly after combined external beam radiation and brachytherapy. Despite a relatively high prevalence of PFD (23–70%) among survivors, it is often underreported and poorly managed (30). The pelvic floor consists of a complex, interconnected system of muscles. The superficial muscles (bulbocavernosus and bulbospongiosus) surround the vaginal entrance, act as a vaginal sphincter, and play a significant role in sexual function, including clitoral erection, vestibular tissue engorgement, and vaginal closure during orgasm. The intermediate layer, which comprises the compressor urethrae and external urinary sphincter, is essential for maintaining urinary continence. The deeper layer, composed of levator ani muscles (pubococcygeus, iliococcygeus, ischiococcygeus, and puborectalis), provides structural support to the pelvic organs, and in conjunction with two external sphincters, aids in closing the urethra and anorectum, and helps maintain continence, particularly under increased abdominal pressure (31,32). PFD may present with a range of symptoms resulting from pelvic floor musculature changes after radiation therapy. These symptoms can include urinary incontinence and urgency, sexual dysfunction and dyspareunia, and fecal urgency and incontinence (33). Complications from PFD can have long-term effects, not only causing physical discomfort but also limiting daily activities and social engagement, ultimately diminishing quality of life and psychosocial well-being (31). Recognizing these effects and implementing timely, effective rehabilitation strategies are crucial for improving overall health and well-being.

Urinary dysfunction manifesting as urgency, frequency, incontinence, dysuria, and retention is one of the most common forms of PFD. In gynecologic cancer survivors, reported prevalences of urinary dysfunction range from 34% to 70% (34–36). Recent data from the EMBRACE Collaborative Group found the ICRU bladder point dose > 75 Gy to be a strong predictor of incontinence owing to its anatomic location near the trigone, bladder neck, and urethra (23). Addressing urinary dysfunction after radiation therapy/brachytherapy typically involves a combination of behavioral therapies, physical therapy, and, in some cases, medical or surgical interventions. Physical therapy includes pelvic floor muscle training (PFMT), biofeedback, and electrical stimulation.

PFMT, commonly referred to as Kegel exercises, has been shown to be effective in improving urinary symptoms in all types of incontinence. Proper technique is critical for a successful outcome, and patients benefit from a structured clinical session with a trained provider or pelvic floor

physical therapists to ensure correct pelvic floor muscle engagement (37). Approximately one-third of women are not able to contract the pelvic floor musculature correctly without guidance. A study by Rutledge *et al.* (38) found that an integrated 12-week PFMT and behavioral therapy program significantly improved urinary incontinence symptoms in 80% of gynecologic cancer survivors (vs. 40% who received usual care). Additional therapeutic approaches, including behavioral therapy, biofeedback, electrical stimulation, and bladder training, are often used to help restore urinary function. Behavioral interventions focus on weight management, reducing heavy lifting, maintaining adequate hydration, preventing constipation, and minimizing bladder irritants like caffeine. Biofeedback enables patients to monitor their pelvic floor exercises using real-time visual and auditory feedback, improving proprioception and aiding in the correct execution of muscle contractions. Electrical stimulation, particularly at low frequencies (below 1000 Hz), enhances neuromuscular function by stimulating passive muscle activity and increasing the number of active receptors, ultimately strengthening the pelvic floor. A multimodal approach—combining PFMT, behavioral therapy, biofeedback, and/or electrical stimulation—has been shown to yield superior outcomes (39–41).

The incidence of fecal incontinence is reported to be between 2% and 34%, and fecal urgency as high as 49% in patients postradiation treatment. (34,42) Advanced radiation techniques such as IMRT have been shown to significantly decrease gastrointestinal toxicity (43). Management of bowel dysfunction after brachytherapy involves similar principles to those used in treating urinary dysfunction, with a focus on pelvic floor rehabilitation. PFMT can help improve the strength and coordination of the muscles involved in bowel control, particularly in patients with fecal incontinence. As with urinary incontinence, combining PFMT with biofeedback or electrical stimulation has been shown to enhance the effectiveness of treatment, helping patients regain better control over their bowel function (41). In addition, lifestyle modifications, such as dietary changes, regular exercise, and management of constipation, are important components of a comprehensive treatment plan. Several studies have shown that probiotics taken during treatment can reduce the rate of acute toxicity (44). Patients may also benefit from guidance on managing bowel urgency, reducing irritants like caffeine, and incorporating regular toileting routines. Multimodal therapy that includes these strategies can significantly improve bowel function and reduce the incidence of incontinence and urgency, contributing to better overall quality of life.

ABS recommendations on toxicity management

A holistic, multidisciplinary approach to care is essential in addressing the physical, emotional, and social aspects of PFD. We recommend that, as part of routine follow-up, questions directed at urinary and bowel func-

tion be developed and implemented in the clinic to identify dysfunction early in follow-up. We then recommend that patients be referred to the appropriate specialists based on symptoms, including urology and pelvic floor rehabilitation services.

Endocrine dysfunction and hormone therapy

Pelvic radiotherapy is associated with a high prevalence of premature ovarian insufficiency (POI) with rates ranging from 30 to 100%, with additional risk imposed by the type of cancer, multimodal cancer-directed therapies (e.g., surgery, chemotherapy), and baseline ovarian reserve (45–47). Risk of ovarian failure after pelvic radiotherapy is strongly associated with age at time of treatment and dose to the ovaries, with an inverse relationship between dose and age (47–49). Laparoscopic ovarian transposition, or oophoropexy, before pelvic radiotherapy is associated with higher rates of ovarian preservation, but does not eliminate the risk of POI (50). While optimal dosimetric constraints for preservation of ovarian function are not well established, keeping the maximum dose of one ovary to less than 10 Gray (Gy) and mean dose to less than 5 Gy has been associated with better preservation of ovarian function (51,52). Use of advanced radiotherapy techniques such as IMRT or particle therapy may be used to achieve these constraints.

Patients with POI experience menopausal symptoms such as vasomotor symptoms (e.g., night sweats and hot flashes), vulvovaginal atrophy, mood swings, and sexual dysfunction, and are at increased risk of osteoporosis, cardiovascular disease, cognitive impairment, and all-cause mortality (4,53). Hormone replacement therapy (HRT) or menopause hormone therapy (MHT) is a component of survivorship care for some patients with POI and can be used to mitigate adverse effects and potentially improve quality of life (54).

Systemic HRT/MHT aims to restore physiological estrogen levels, thereby reducing symptoms of and minimizing long-term health risks associated with estrogen deficiency. For patients with an intact uterus, progestogen (progestin, progesterone) is also required to prevent endometrial hyperplasia and malignancy (55). Society of Gynecology Oncology (SGO) supports its use in appropriately selected patients, particularly those with cervical cancer, where HRT does not seem to increase the risk of recurrence, including in patients with cervical adenocarcinoma (56–61). In contrast, HRT/MHT use in patients with a history of endometrial or ovarian cancer is more nuanced and requires individualized decision-making based on tumor histology, molecular profiling, and other risk factors (57,61,62).

Despite its benefits, systemic HRT/MHT remains underutilized in cancer survivors for multiple reasons, including a lack of provider knowledge or comfort managing POI and concerns regarding increased risks of cardiovascular disease and breast cancer with HRT (63). However, sub-

sequent analyses have shown these risks to be age- and formulation-dependent, with younger women (i.e., those experiencing POI) benefiting from physiologic estrogen replacement without the increased risks observed in older, postmenopausal women (64). Notably, nonoral estrogen preparations, such as transdermal patches, have a lower risk of thromboembolic and cardiovascular events compared to oral formulations by bypassing first-pass hepatic metabolism.

In addition to systemic HRT/MHT, local vaginal estrogen improves vaginal epithelial integrity and elasticity, which may be compromised from direct radiation damage to the mucosa as well as from estrogen deprivation (65). Vaginal atrophy, stenosis, dryness, and dyspareunia are common complications after brachytherapy that can significantly impair quality of life. Results from EMBRACE-I showed that HRT is associated with lower rates of vaginal shortening and stenosis, and improvement in sexual function (66). For localized symptoms, topical estrogen therapy can be delivered via creams, rings, or inserts (67). Vaginal estrogen therapy has minimal systemic absorption, making it a safer option for patients with hormone-sensitive malignancies or when systemic estrogen may be contraindicated (68,69). Vaginal estrogen can be used either alone or in conjunction with systemic HRT/MHT and is commonly recommended after radiation treatments for gynecologic cancers for patients of all ages who may experience GU syndrome of menopause. Vaginal estrogen can be started as soon as 2 weeks after brachytherapy to improve vaginal mucosal tissue quality.

ABS recommendations for POI

Because POI and associated symptoms typically occur within 3–6 months of pelvic radiotherapy, it is critically important that the radiation oncologist be well-informed and prepared to assess for and treat POI. POI can be diagnosed by history (e.g., presence of vasomotor symptoms) or with serum FSH and estradiol levels in the menopausal range (70). Estrogen with or without progesterone should be discussed with all patients with POI, unless contraindicated, including risks of POI and the importance of HRT. A recently published review article includes guidance on available formulations and dosing for both systemic and topical HRT, with a summary in Table 1 (71).

Guidelines recommend continuing HRT at least until the age of 50–51 or the average age of natural menopause (70). Regular monitoring, including baseline and follow-up bone density scans, lipid panels, and cardiovascular assessments, is recommended for patients on long-term HRT. Referrals to specialists such as cardiology, endocrinology, mental health specialists, and women's health/menopause clinic should be made based on the patient's individual needs and response to initial estrogen therapy. In patients with cervical, vaginal or vulvar cancer with POI, we generally recommend starting estrogen replacement (0.1 mg estradiol

transdermal patch twice weekly), with addition of 100 mg oral micronized progesterone nightly for patients with an intact uterus, and continuing at least until age 50–51 (70). In addition to systemic estrogen, vaginal estrogen can be used for vaginal dryness or dyspareunia and other symptoms of GU syndrome of menopause. Over half (58%) of the ABS gynecologic radiation oncologists reported prescribing vaginal estrogen for their patients. We recommend that radiation oncologists either prescribe vaginal estrogen for their patients as needed or work with the gynecologist oncologist, depending on the patient. A multidisciplinary approach is essential to guide individualized HRT/MHT decisions, especially in patients with relative contraindications to HRT (e.g., history of VTE or endocrine-responsive tumors).

Sexual/vaginal health

Radiation to the pelvis in the form of external beam radiation and/or brachytherapy can lead to VS, which can impact patients' sexual health (1–3). Notably, patients can experience shortening and narrowing of the vaginal canal due to de-epithelization and fibrosis, which can lead to dyspareunia, vaginal pain, dryness, and bleeding. Practitioners may recognize the risk of VS; however, few assess sexual health symptoms routinely in the follow-up care of women (72,73). Furthermore, data on the mechanism of radiation damage to the female arousal structures are severely lacking (74).

Follow-up care of patients after brachytherapy should include an assessment of VS and sexual/vaginal health. Available metrics for assessing VS may include direct measurements by the physician with sounding, or physician or patient-reported methods such as the commonly used CT-CAE toxicity scoring system, LENT-SOMA, or EORTC QLQ-CX24 (25,75,76). Separate metrics exist for assessing sexual dysfunction in women, which are also of value in the post-brachytherapy patient. Sexual health or sexual dysfunction scales of note include: the EORTC SHQ-C22 (77), Female Sexual Function Index (78), and Sexual Function-Vaginal Changes Questionnaire (79). Thus far, one metric of assessing VS or sexual dysfunction has not been endorsed.

Preventative treatment options to minimize VS and sexual dysfunction may include vaginal dilators, topical therapies (i.e., lubricants, vaginal moisturizers, low-dose topical estrogen), vibrators, or pelvic floor rehabilitation. Patients should be educated on vaginal dilator usage after completion of brachytherapy to maintain patency of the vaginal canal for both future examinations and sexual intercourse. Patients should utilize water-based lubricants during dilator usage or sexual activity, as vaginal dryness may occur after brachytherapy. Vaginal moisturizers are able to help rehydrate vaginal tissue and absorb into the vaginal lining, therefore mimicking natural vaginal secretions. They can be used as a non-hormonal alleviation of

Table 1
Summary of hormone replacement therapy options for premature ovarian insufficiency.

Component	Formulation	Route	Dose range	Notes
Estrogen	17 β -estradiol	Transdermal	100 μ g/day	Patch (e.g., Alora, Climara, Minivelle, Vivelle-dot); apply once to twice weekly
	17 β -estradiol	Oral	1–2 mg/day	Bioequivalent option
	Conjugated equine estrogen	Oral	0.625–1.25 mg/day	Traditional option
	17 β -estradiol	Vaginal	100 μ g/g	Administer 0.5 g daily for 2 weeks, then twice weekly, maintenance 0.5–2 g
	Conjugated equine estrogen	Vaginal	0.625 mg/g	Administer 0.5 g daily for 2 weeks, then twice weekly, maintenance 0.5–1 g
Progestogen	Micronized progesterone	Oral	100–200 mg/day	Continuous dosing avoids withdrawal bleeding, as patients are at high risk of cervical outlet obstruction

vaginal dryness and can be applied regularly. Referral for pelvic floor rehabilitation, which has been shown to improve female sexual dysfunction, including but not limited to arousal, orgasm, and overall satisfaction, should also be considered (80). Referral to a sexual health clinic, which can assess, diagnose, and treat sexual dysfunction, is encouraged. These clinics provide patients with a safe space to identify and manage their sexual health concerns (81).

The emotional and psychological consequences of gynecologic brachytherapy are an area of emerging evidence. Particularly, women who undergo treatment for intact tumors with intracavitary, hybrid, or interstitial applicators are at risk for emotional distress secondary to pain and vulnerability during treatment. Post-traumatic stress disorder (PTSD) rates in women undergoing gynecologic brachytherapy have been reported as high as 41% and may linger with partial to full PTSD symptoms for years after treatment (28,82). Given the significant risk of psychological and emotional distress during brachytherapy, patients should be asked about emotional well-being in follow-up care, and appropriate referrals should be made to psychotherapy or psychiatry. If the provider does not feel comfortable providing or interpreting PTSD symptom scales such as the Impact of Event Scale-Revised, referrals should be placed to a mental health provider. Thus far, there are no developed interventions in brachytherapy follow-up care to ameliorate the distress, but instead, the focus should be emphasized in the preventative phase with appropriate sedation and pain control during brachytherapy.

Vaginal dilator use following radiation to the pelvis

Vaginal dilator therapy is an essential component of postradiation care for patients who have undergone EBRT and/or brachytherapy for gynecologic cancers. Most clinical recommendations suggest the use of a vaginal dilator 2–3 times per week to mechanically break adhesions formed at the apex, promoting mucosal stretching and maintaining vaginal patency. Regular sexual intercourse can also serve as an alternative or complementary strategy (1,83). The dilator also serves to mitigate late submucosal

effects, such as elastosis and circumferential fibrosis, by stretching the vaginal tissue and facilitating epithelial cell proliferation (1). Therefore, regular use of vaginal dilators is a widely recommended strategy to mitigate these complications (84–86).

VS is more prevalent among patients with cervical cancer than those with endometrial cancer (1,87). In the study by De Morais Siqueira *et al.* (87), the prevalence of VS was 79% in women with cervical cancer (23% with grade 3 stenosis) compared to 67% in women with endometrial cancer (11% with grade 3 stenosis). The higher prevalence in cervical cancer patients may be partly attributed to more intensive radiation treatment, as they were more likely to receive combined EBRT and high-dose-rate brachytherapy, whereas endometrial cancer patients often received brachytherapy alone or with EBRT at lower total doses. Additionally, reporting bias may contribute to the observed differences. Data from the EMBRACE study further support the association between treatment parameters and VS risk in cervical cancer patients. Identified risk factors included higher recto-vaginal reference point dose (HR = 1.025, $p = 0.029$), EBRT doses exceeding 45 Gy in 25 fractions (HR = 1.770, $p = 0.056$), and vaginal tumor extension (HR = 2.259, $p < 0.001$) (22). Based on these considerations, some experts advocate for more intensive vaginal dilator protocols in patients at higher risk of stenosis, such as increased frequency, longer session duration, or extended use throughout follow-up. However, these recommendations are not yet supported by robust clinical evidence.

A systematic review from the Cochrane Library suggested that routine use of vaginal dilators might help maintain vaginal length and elasticity. However, there is no clear consensus regarding the duration for which women should use dilators (88). According to data from the EMBRACE I study in cervical cancer patients, regular dilation or sexual activity significantly reduces the risk of developing severe VS (Grade 2 or higher) within 5 years after pelvic radiation therapy for cervical cancer (23% vs. 37%, $p \leq 0.001$). The authors emphasized the crucial role of consistency in the use of dilators or sexual activity, as well as the regular follow-up assessments to monitor the patient's vaginal health and the effectiveness of dilation therapy (85). Liu *et*

Table 2
Characteristics of the most common vaginal dilators.

Brand/Product	Material	Diameter range (mm)	Notable features
Amelie	Hard plastic	15–35 (set of 5)	Optional vibration Can be chilled, no lubricant needed
Berman	Hard plastic	19–38 (set of 4)	
Cool water cones	Hydrocolloids	3 cone sizes	
Inspire	Silicone	12.5–32.5 (set of 5)	Expands 1 mm at a time, optional vibration
Intimate rose	Silicone	11.5–38 (set of 8)	
Milli	Silicone cover	15–40 (expandable)	
She-Ology	Silicone	12.5–30 (set of 5)	GRS-compatible options
Soul Source	Silicone	12.7–41 (set of 4)	
Syracuse	Hard plastic	13–35 (set of 7)	
Vaginismus.com	Hard plastic	15–38 (set of 6)	With ergonomic, solid-lock handle
VuVatech	Silicone	12.7–38 (set of 5)	Options containing magnets

Adapted from Liu et al. (2021) (86).

Table 3
ABS working group recommendations for vaginal dilator use by treatment type.

Treatment type	Recommended frequency	Duration of use
Vaginal brachytherapy	2–3 times per week (75% agreement)	Until discontinuation is advised by a radiation oncologist or gynecologic oncologist based on follow-up exams (73% agreement)
External beam radiation therapy	2–3 times per week (67% agreement)	Until discontinuation is advised by a radiation oncologist or gynecologic oncologist based on follow-up exams (75% agreement)
External-beam radiation + Brachytherapy	2–3 times per week (58% agreement) >3 times per week (25% agreement)	Until discontinuation is advised by a radiation oncologist or gynecologic oncologist based on follow-up exams (50% agreement) or indefinitely (33%)

al. (86) stated that no evidence suggests that any material (i.e., plastic, latex, or silicone) is superior to others, so the choice depends on patient preference (Table 2). Although patients often report greater comfort and satisfaction with silicone dilators, Morgan *et al.* (89) emphasized the need for further research to validate these observations. There is currently no standardized protocol regarding the frequency or duration of dilation sessions. The use of vaginal moisturizers, lubricants, and local estrogen can further enhance comfort and efficacy. Additional factors associated with improved outcomes include prolonged dilation beyond 1 year (90) and the incorporation of relaxation techniques such as meditation and soothing music (86).

ABS recommendations on vaginal dilator use

The ABS working group recommendations to provide a framework for healthcare providers during implementation and ongoing support of effective dilator therapy are provided in Table 3. We recommend patients start with the largest comfortable dilator size that can be inserted without pain and gradually increase dilator size as comfort allows. Even for a patient who is not sexually active, the goal of maintaining patency is to allow good-quality pelvic exams as is indicated for cancer surveillance. Engaging in regular vaginal intercourse can serve as an alternative to mechanical dilation, provided there is no contraindication (e.g.,

active infection, ongoing mucosal irritation). The working group generally considers one instance of sexual activity as equal to one day of use of a dilator. We recommend the use of a vaginal lubricant with dilator use and the use of supplemental vaginal moisturizers and/or vaginal estrogen as needed to improve vaginal tissue quality.

We recommend vaginal dilator use begin 2–6 weeks after completion of radiation therapy. Consensus for length of time to use a dilator was 6–10 minutes each session (50% agreement), with ≤ 5 minutes (25% agreement). We, therefore, recommend vaginal dilator use for 1–10 minutes and recommend pts to try to use it for > 5 minutes. We recommend clear, written directions on dilator use and care, along with ongoing regular follow-ups to ensure compliance and education on the importance of maintaining dilator therapy. Patients with a history of trauma, sexual assault, or PTSD may require additional support and counseling before initiating dilator therapy.

Conclusion

ABS working group recommendations for women with gynecologic cancers regarding post-treatment surveillance, toxicity assessment, and management, including pelvic, vaginal, and sexual health, are summarized below:

Post-treatment Surveillance

- **Pelvic exams:** Every 3 months for the first 2 years, then every 6 months for years 3–5, and annually thereafter.
- **PET/CT scan:** At 3 months post-brachytherapy (for intact cervical and vaginal cancer).

Toxicity Assessment

- **Preventative measures:** Probiotics, anti-diarrheals, etc.
- **Early recognition:** Identify and counsel for common toxicities.
- **Follow-up evaluation:**
 - Include quality of life (QOL) questionnaires.
 - Include patient-reported outcomes.
- **Assess:**
 - Urinary and bowel function.
 - Vaginal health.
 - Sexual function.

Pelvic Floor Dysfunction (PFD) Management

- Refer high-risk or symptomatic patients to appropriate services (e.g., physical therapy, disease-specific tertiary care).

Endocrine Dysfunction and Hormone Therapy

- **For patients with premature ovarian insufficiency (POI)** with cervical/vaginal cancer:
 - Estrogen replacement: 0.1 mg estradiol transdermal patch, twice weekly.
 - Add oral micronized progesterone 100 mg nightly for those with intact uterus.
 - Continue until at least age 50–51.
- **Endometrial cancer:** Estrogen therapy is controversial.

Sexual/Vaginal Health

- **Use of:**
 - Vaginal dilators
 - Vaginal moisturizers/lubricants
 - Vaginal estrogen (controversial in endometrial cancer)
- **Consider:**
 - Pelvic floor physical therapy
 - Referral to sexual health clinic if available

Vaginal Dilator Use

- **Start:** 2–6 weeks post-radiation.
- **Frequency:** 2–3 times/week, 5–10 minutes per session.
- **Instructions:**
 - Start with the largest comfortable dilator.
 - May use vaginal lubricants or moisturizers.
 - Continue until told otherwise by the radiation oncologist/gynecologist based on pelvic exams.

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