The management of sexual dysfunction resulting from radiotherapy and androgen deprivation therapy to treat prostate cancer: a comparison of uro-oncology practice according to disease stage

Article (Accepted Version)

Kinnaird, William, Kirby, Michael G, Mitra, Anita, Davda, Reena, Jenkins, Valerie and Payne, Heather (2020) The management of sexual dysfunction resulting from radiotherapy and androgen deprivation therapy to treat prostate cancer: a comparison of uro-oncology practice according to disease stage. International Journal of Clinical Practice. a13873. ISSN 1368-5031

This version is available from Sussex Research Online: <http://sro.sussex.ac.uk/id/eprint/95346/>

This document is made available in accordance with publisher policies and may differ from the published version or from the version of record. If you wish to cite this item you are advised to consult the publisher's version. Please see the URL above for details on accessing the published version.

Copyright and reuse:

Sussex Research Online is a digital repository of the research output of the University.

Copyright and all moral rights to the version of the paper presented here belong to the individual author(s) and/or other copyright owners. To the extent reasonable and practicable, the material made available in SRO has been checked for eligibility before being made available.

Copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way.

TITLE

The management of sexual dysfunction resulting from radiotherapy and androgen deprivation therapy to treat prostate cancer: A comparison of uro-oncology practice according to disease stage

ABSTRACT

Objectives:

To establish current uro-oncology practice in the management of sexual dysfunction following radiotherapy and/or androgen deprivation therapy to treat prostate cancer. To identify differences in approach to the management of sexual dysfunction according to disease stage.

Subjects and methods:

A 14-question mixed methods survey was designed to assess current UK practice. Closed and open-ended questions were used to quantify results while allowing participants to expand on answers. The survey was distributed to members of the British Uro-Oncology Group at the 2019 annual meeting.

Results:

Surveys were completed by 63 uro-oncologists attending the annual meeting of the British Uro-Oncology Group (response rate 66%). The major issue highlighted was a difference in approach to managing sexual dysfunction according to disease stage. More than half of participants (56%) said 'advanced stage of disease' was a barrier to discussing sexual dysfunction. Clinicians were less likely to discuss sexual dysfunction, take baseline assessments, refer to a specialist clinic or offer rehabilitation when dealing with patients with advanced disease. Only a minority said the management sexual dysfunction was primarily their responsibility (11%). Nearly all clinicians (92%) had access to sexual dysfunction clinics however the majority of clinicians did not routinely refer patients.

Conclusions:

This study shows men with advanced prostate cancer need better support in managing sexual dysfunction. Patients receiving long-term ADT are less likely to be offered any kind of help or intervention. Specific guidance on managing sexual dysfunction in this cohort may result in improvements in sexual function, emotional wellbeing, quality of life, mental health and confidence.

KEY WORDS

Prostate cancer
Advanced disease
Erectile dysfunction
Sexual function
Quality of Life
Androgen deprivation therapy

What's already known about this topic?

- Patients who receive radiotherapy and androgen deprivation therapy to treat prostate cancer are at risk of sexual dysfunction
- Sexual dysfunction significantly affects patients' quality of life, relationships, sense of masculinity and self-esteem
- Guidelines recommend early support and intervention to manage sexual side effects, but patients report unmet needs in the area

What does this article add?

- This survey highlights differences in approach to the management of sexual dysfunction according to disease stage
- Patients with metastatic disease are less likely to receive help than those with localised or locally advanced disease
- Advanced disease is often seen as a barrier to discussions about sexual side effects
- Clinicians have access to specialist andrology support services but do not routinely refer patients for help

INTRODUCTION

Prostate cancer is the most commonly diagnosed cancer in the UK with more than 57,000 new cases each year¹. Around one in six of those present with advanced disease².

Radiotherapy (RT) and androgen deprivation therapy (ADT) are used in the management of prostate cancer. ADT ranging from 6 to 36 months is used in the neo-adjuvant and adjuvant setting with RT to treat localised and locally advanced prostate cancer. ADT is also used in the adjuvant or salvage setting post-prostatectomy in combination with RT. Long-term ADT is used as a primary treatment for metastatic disease and may be combined in some cases with RT, chemotherapy, androgen receptor-targeted agents or other novel therapies. Earlier diagnosis and improved treatments mean there have been significant improvements in survival rates for all stages of disease. The overall five-year survival rate is 86.6% for men with all stages of disease and 49.0% for men with stage four disease³. This means men are living for longer than ever with the consequences of treatment.

Sexual dysfunction

Sexual dysfunction (SD) is a common side effect of both RT and ADT. Both therapies cause high levels of erectile dysfunction (ED) with prevalence estimated to be 67-85% after RT and up to 94% for ADT^{4,5,6}. More than 80% of prostate cancer survivors have described their overall sexual function as 'poor/very poor' at 18 to 42 months after diagnosis⁷. Other sexual side effects linked to ADT include loss of libido, delay or inability to reach orgasm, penis and testicle shrinkage, reduction in ejaculate and infertility^{8,9}. There may also be indirect effects on sexual lives caused by breast enlargement, weight gain, hot flushes and fatigue¹⁰. RT can cause dry ejaculation, penile shrinkage, dyspareunia and infertility^{9,11,12}.

Androgen deprivation therapy

ADT commonly involves the use of luteinizing hormone-releasing hormone agonists (LHRHa) which reduce testosterone production in the testes to castrate levels. Alternatively, antagonists can also be used as a first-line, second-line or combined androgen therapy, to stop the action of testosterone. The resulting decrease in serum testosterone leads to a loss of sexual interest and function. The reduction in androgens effects erectile function (EF) directly, as they play a role in maintaining the integrity of the smooth muscle, and indirectly, as the loss of libido and resulting decrease in penile tumescence leads to a decrease in cavernosal oxygenation and damage to smooth muscle cells¹³. The loss of smooth muscle then results in venous leak and a further decline in EF.

Novel androgen receptor antagonists

The treatment landscape for metastatic disease has changed greatly in recent years with the emergence of several novel androgen receptor targeted agents. Abiraterone and enzalutamide are now well established in the metastatic castrate-resistant setting with growing evidence of efficacy in the hormone-sensitive setting too. These antagonists work by blocking the effect of testosterone and therefore also have a negative impact on sexual libido and function. Their effect is moderate in comparison LHRHa, however they will normally be used in combination with ADT¹⁴.

Radiotherapy

RT is thought to cause ED in several ways. Firstly, damage to vascular structures can lead to luminal stenosis and insufficient blood supply in the cavernous arteries. Secondly, damage to the erection-inducing nerves can result in loss of motor function. And thirdly, corporal tissue fibrosis can lead to the development of venous leak from the penis and the inability to maintain erectile rigidity. As before, the resulting loss of erections, means smooth muscles go unused resulting in atrophy¹⁵.

Combination treatment

Combined RT and ADT treatment has been shown to have a particularly negative impact on EF. In a study of patients who underwent RT for localized prostate cancer, men who also underwent ADT reported lower EF scores and poorer response to pharmaceutical interventions during the first 3 years after treatment¹⁶. Another study investigating men treated with RT found 26% of men who also received ADT regained their baseline EF after 2 years compared with 42% of men who received RT alone¹⁷.

Impact of sexual dysfunction

SD has been shown to significantly affect quality of life, relationships, and self-esteem^{18,19}. Sexual performance can often be integral to men's masculine identity and the loss of sexual function can cause high levels of despair²⁰. Patients and partners often identify changes to sexual lives and reduced intimacy as the most distressing side effect of treatment²¹. Donovan et al compared sexual bother in men treated with ADT and men who underwent a radical prostatectomy (RP) with no ADT²². After six months, both groups reported similar loss of sexual function and similarly low levels of bother. However, bother in men treated with ADT increased significantly at 12 months as sexual function failed to improve. In contrast, bother reduced in men who underwent RP as their sexual function began to recover. The authors concluded that men on ADT did not adjust to the changes in sexual function despite lowered libido. They said that as men on ADT were unlikely to fully recover their baseline sexual function, management strategies needed to target bother as well as function. Couples needed to reframe and modify their sexual relationships to re-establish satisfying levels of intimacy. Studies have shown gay men in particular experience poorer sexual function and quality of life outcomes than heterosexual men²³. Physiologically, anal penetration requires greater penile rigidity than vaginal penetration, which may partly explain poorer outcomes. Gay men have reported that when managing symptoms, clinicians use heteronormative measures of sexual function relating to the ability to perform vaginal intercourse^{24,25}. They have poignantly described experiencing barriers and discrimination in their healthcare experiences that left them with unmet support needs.

ADT and mental health

Distress caused by the loss of sexual function is part of a wider impact ADT has on men's mental health. ADT has been found to impair memory, attention and executive functions with a significant decline in cognitive performance²⁶. Men also report fatigue, irritability, anxiety and other adverse effects²⁷. ADT is often initiated shortly after patients are given their initial prostate cancer diagnosis. The psychological distress of the patient is then combined with the hormonal impact. In a survey of men newly diagnosed with metastatic disease, a third were identified as highly distressed and a minority of men met the clinical criteria for depression²⁶. It is also likely that distress and depression are interlinked with ED. Tavlarides et al found cancer-specific anxiety was associated with poor sexual function and

that as anxiety increased sexual function and satisfaction decreased²⁸. Conversely, men have reported that their failure to “perform” sexually often increased their distress or depression²⁹. Consequently, the management of psychological distress may need to be a central objective when targeting sexual function and quality of life outcomes³⁰.

Management of sexual dysfunction

Early support and intervention are recommended to minimise the impact of treatment-induced changes and manage reduction in libido¹⁰. There are a wide range of treatment and support options including lifestyle changes such as weight control and daily exercise, counselling, psychosexual support, phosphodiesterase type 5 inhibitors (PDE5-Is), vacuum erectile devices, implants and alprostadil-based injections, pellets and creams. However, despite the well-documented distress caused by SD, the benefits of rehabilitation and intervention are not always apparent to men whose libido has been reduced by ADT. In 2015, national guidelines for managing ED after radical RT and ADT for prostate cancer were developed through a UK-wide consensus published in the International Journal of Clinical Practice¹⁰. These guidelines were based on a literature review, expert opinion and clinical practice and were designed to help healthcare professionals manage patients’ rehabilitation. They recommended discussions about rehabilitation before and after RT/ADT, a baseline assessment and the instigation of an early rehabilitation programme beginning with first line treatment with PDE5-Is and a vacuum erectile device [Figure 1]. The guidelines were designed for use post-RT/ADT and gave no specific advice for men with advanced or metastatic disease who may receive life-long ADT as well as androgen receptor-targeted agents, chemotherapy, palliative RT and other novel agents either at diagnosis or in sequence with the development of castration resistance.

Unmet needs

Despite the publication of this guidance, research has shown high levels of unmet need in the area of SD. The UK-wide Life After Prostate Cancer Diagnosis study (LAPCD) found only 44% of men were offered medication, devices or referral to a specialist clinic to help with rehabilitation after prostate cancer treatment¹¹. This figure fell to 26.9% among men with stage IV disease and just 18.8% among those on monotherapy ADT. Dyer et al also found men were dissatisfied with the support they received³¹. They reported a lack of consensus over healthcare roles and responsibilities. Men and their partners have been shown to be given limited opportunities to discuss sexual functioning in prostate cancer follow-up clinics³². Given this apparent discrepancy in guidelines and patient-reported experience, we sought to identify uro-oncologists’ views on their role in the management of SD. An understanding of UK-wide practice may highlight areas for improvement and development. This may be particularly useful in the area of advanced disease where advice is less clear.

SUBJECTS AND METHODS

Design

A survey [Appendix A] was developed to establish current practice in the management of SD caused by RT in combination with ADT for localised and locally advanced disease and ADT as monotherapy for advanced/metastatic prostate cancer. The questions were designed by a research group consisting of uro-oncology doctors and a uro-oncology therapeutic radiographer. Previously conducted surveys of healthcare professionals were reviewed and used to inform the process³³. The questions were designed to focus on pre and post treatment discussions and assessment, management responsibilities, access to specialist support, patient engagement, management strategies, barriers and areas for improvement. There was an emphasis on identifying any differences in approach according to the stage of patients' disease and treatment intent. The survey consisted of 14 questions with a combination of multiple-choice and open-ended answers. Pilot-testing of the survey was carried out with six uro-oncologists and their responses were used to refine the content, clarity and relevance of the survey.

Administration

The survey was conducted via paper questionnaires and using a web-based format (Survey Monkey®). Paper copies were distributed to delegates attending the British Uro-Oncology Group (BUG) Conference in September 2019. BUG membership is largely made up of clinical and medical oncologists with direct experience of using ADT and RT to treat prostate cancer. A follow-up email was sent out after the conference to give any delegates that had not completed the survey another chance to respond. The survey was voluntary, without remuneration and was open to responses from September to December 2019. Completion was presumed to constitute informed consent.

Ethics

The survey involved healthcare professionals providing information in a way which meant responses were not identifiable. It did not involve patients or the use of any patient data. For these reasons, this study did not require ethical approval.

RESULTS

Participants

The survey was distributed to 95 members of the British Uro-Oncology Group via paper copy and a Survey Monkey email. There were 48 response on paper and 15 responses via Survey Monkey giving a total of 63 responses (response rate 66%). Two responses were from clinicians who did not treat prostate cancer and therefore excluded from the survey. The respondents had a variety of experience, but three quarters had worked for more than five years as a urological oncologist. There was a 2:1 ratio of women to men. Two of the participants were consultant therapeutic radiographers. Not all respondents answered every question. For convenience, all those who responded to the survey are referred to as 'clinicians'. [Appendix B, Figure 1]

Pre-treatment discussions/assessment of sexual dysfunction

Prior to commencing treatment, 83% (n=49) of clinicians reported they 'always' discussed SD with patients who had localised disease [Figure 2]. This fell to 72% (n=43) for locally advanced disease and 39% (n=23) for metastatic disease. Overall, clinicians were less likely to have pre-treatment discussions about sexual function with patients with metastatic disease – 29% (n=17) said they would discuss the subject only 'occasionally'. There was a similar picture with baseline assessments for SD. A total of 76% (n=46) of clinicians reported they 'always' or 'usually' took a baseline for patients with localised disease compared with 67% (n=41) for locally advanced disease and 32% (n=19) for metastatic disease [Figure 3]. Around 15% (n=9) of clinicians never took a baseline assessment for patients with metastatic disease compared with 3% (n=2) for both localised and locally advanced disease.

Responsibility for management of sexual dysfunction

Only a minority of clinicians reported that the management SD was primarily their responsibility (11%, n= 7) [Figure 4]. Most said it was the responsibility of andrologists and specialist dysfunction clinics (52%, n=32) or clinical nurse specialist (25%, n=15). The five clinicians who reported 'other' expanded on their response with free text. Two said the responsibility was taken by urologists, one said a clinic was run by representatives of a vacuum erectile device company and two said responsibility was shared between urologists, specialist nurses and ED clinic staff.

Referrals to specialist sexual dysfunction clinic

Nearly all clinicians (92%, n=55) were able to refer patients to specialist SD clinics. However, in free text comments some mentioned access was not always straightforward. Obstacles included long waiting times, prioritisation of patients with localised disease and unspecified 'barriers'. The majority of clinicians did not routinely refer all patients, irrespective of disease stage [Figure 5]. Around 32% (n=18) of clinicians said they 'always' or 'usually' referred patients with localised disease. This figure fell to 14% (n=8) for locally advanced disease and 8% (n=4) for metastatic disease. Around 29% (n=29) said they never referred metastatic patients to the clinic compared with 5% (n=3) for locally advanced disease and 4% (n=2) for localised disease.

Many clinicians expanded on their reasons in free text comments. Several reported that patients often declined referral despite being offered. Comments included:

- *'Patients on ADT have a low libido and not so bothered'*

- *'A significant number decline'*
- *'Not all patients wish for referral'*
- *'Unusual a patient wishes'*
- *'Many gentlemen decline intervention/referral'*

This theme was expanded in the next question in which those who did not routinely refer gave reasons for their decision [Figure 6]. The most common reason given for all disease stages was that the patient declined, echoing comments from the previous answers. Clinicians reported SD was being managed elsewhere in 42% (n=18) of patients with localised disease, 37% (n=17) of those with locally advanced disease and 22% (n=11) of those with metastatic disease. The main difference in reasons for not referring was in relation to efficacy of treatment. Around 35% (n=17) of clinicians said treatment was unlikely to be effective for patients with metastatic disease, compared with 15% (n=7) of patients with locally advanced disease and 2% (n=1) of patients with localised disease.

Follow-up discussions of sexual dysfunction

Discussion of SD in follow-up clinics varied according to disease stage and treatment regime [Figure 7]. Clinicians were less likely to discuss SD in follow up if patients were being treated for metastatic disease with long term ADT or other systemic therapies. Around 25% (n=15) of clinicians reported they 'always' or 'usually' discussed the issue with this patient group. This compared with 66% of clinicians (n=39) who would discuss the issue with patients who had completed radical RT and ADT. Around 58% (n=34) would discuss the issue with patients who had completed radical RT but were still receiving ADT or other systemic therapies. The majority of clinicians (74%) reported that patients raised the issue of SD only 'occasionally', irrespective of disease stage and treatment regime [Appendix B, Figure 2].

Sexual dysfunction management strategies

Clinicians thought patients receiving long-term systemic treatment for metastatic disease were less likely to benefit from any management strategy for SD compared to those men who had completed RT/ADT and those who had completed RT but were still receiving ADT [Figure 8]. The biggest disparity was in the use of PDE5-Is where 98% (n=50) of clinicians thought they were of benefit to patients who had completed RT/ADT, compared with 59% (n=30) of clinicians who thought they were of benefit to patients with metastatic disease treated with long-term ADT.

In terms of management preference, clinicians chose a broadly similar selection of interventions across all disease stages and treatment regimes. The top five interventions selected for all patient groups included vacuum erection devices, PDE5-Is, penile injections and counselling.

Barriers to discussing sexual dysfunction

Clinicians reported the main barriers to discussing SD were lack of time (80%, n=43), patient reluctance to discuss sexual function (67%, n=35), advanced stage of disease (56%, n=29), lack of confidence in management strategies for SD (54%, n=29), language/ethnicity/cultural/religious factors (51%, n=26) and a lack of knowledge/training (49%, n=26). The full list of barriers is shown in Table 1.

Some of these factors were highlighted when clinicians were asked what would improve the management of SD. They reported their service would be improved by a dedicated SD clinic

(96%, n=47), specialist support (93%, n=43), more time in clinic (84%, n=42) and more training (84%, n=41) [Appendix B, Figure 3].

Responses by clinician gender

There was no significant difference in responses between male and female clinicians on subset analysis [Appendix B, Figure 4]. Male clinicians were marginally more likely to have pre-treatment discussions about SD and female clinicians were marginally more likely to have post-treatment discussions. The only notable differences in responses were when clinicians were asked to highlight potential barriers to discussions about SD. Male clinicians were more likely to identify advanced stage of disease, advanced age of patient and language/ethnicity/cultural/religious factors as barriers to discussion. The differences in male/female responses in all other categories were less marked.

DISCUSSION

SD is a common and distressing side effect of RT and ADT to treat prostate cancer. However, research has demonstrated significant levels of unmet need among patients regarding the management of this problem. This study was designed to provide an overview of uro-oncology practice in this area to establish the current baseline. It is the first to provide evidence of differences in approach according to disease stage.

The majority of clinicians who responded to this survey did not regard the management of SD as primarily their role. Just one in ten said they took overall responsibility for addressing sexual side effects. Most reported that andrologists, specialist clinics and clinical nurse specialists were responsible. However, despite almost all clinicians having access to such support services, only a minority said they referred patients routinely. Clinicians highlighted a range of barriers to greater engagement. These included practical factors such as a lack of time, knowledge and training, medical factors such as advanced disease stage or a lack of confidence in interventions and social factors such as patient reluctance or cultural and language barriers. The number one barrier to discussing SD was 'lack of time', cited by 80% of clinicians, which suggests clinicians might be willing to engage further if they were not limited by other pressures. Even when dealing with patients with localised disease, a significant proportion did not routinely discuss SD before and after treatment or take a baseline of sexual function. These findings echo similar work by Dyer et al who surveyed GPs, practice nurses, urologists and urology nurse specialists about the management of ED after prostate cancer treatment³¹. They found a lack of assessment of EF before and after prostate cancer treatment, delays in initiating ED management and a lack of consensus over roles and responsibilities for managing SD.

Advanced disease

In particular, the results of this survey highlighted differences in approach according to disease stage. Patients with metastatic disease were less likely to receive support and interventions than patients with localised or locally advanced disease. More than half of clinicians identified 'advanced stage of disease' as a barrier to discussing SD. When dealing with patients with metastatic disease, clinicians were less likely to:

- Discuss SD before treatment
- Take a baseline assessment of sexual function
- Refer to a specialist SD clinic
- Discuss SD in follow-up
- Offer management strategies

Unmet needs

These findings are consistent with the LAPCD study, which was the first to investigate health-related quality of life outcomes in men with advanced and metastatic prostate cancer at scale⁷. It found that although sexual morbidity was common, most men reported they were not offered interventions or support. Similar proportions of men with stage I or II (46.7%) and stage III (47.7%) disease were offered interventions, compared with 26.9% with stage IV prostate cancer. It also found just 18.8 % of men on ADT monotherapy were offered interventions compared with those who had surgery alone (80.9%), brachytherapy

alone (62.9%) and external beam RT alone (34.5%). Few other studies have specifically investigated SD in patients with advanced prostate cancer. However, these findings are consistent with literature looking at a broader cohort of patients with advanced cancer. Bond et al found the sexual problems of patients with advanced cancer were not addressed by the health care system³⁴. Patients reported a desire for intimacy and a high prevalence of sexual problems but an unmet need for support.

The reasons for this disparity are not well understood as most research in this area has focused on early stage disease. Clinicians in this study said 'patient declined' was the most common reason for not referring a patient for specialist SD clinic. This is consistent with research that has shown prostate cancer patients are often reluctant to discuss these issues. Men are likely to prioritise prolonged survival over sexual side effects when making treatment decisions³⁵. Concerns about SD are initially perceived it to be unimportant. However, patients may later regret they did not fully consider the impact. Healthcare professionals may also overlook problems because patients 'self-silence' to cope with the situation³⁶. Bratus et al found a direct relationship between the severity of disease and the willingness of men to seek help for ED³⁷. The more advanced the malignancy, the less likely men were to seek help and obtain treatment for erection problems. National UK guidelines have encouraged healthcare professionals to do more to engage reluctant patients in discussions about sexual side effects¹⁰. The benefits of early intervention may not always be obvious to patients whose libido is affected by ADT.

Sexual function in advanced disease

This study showed many clinicians thought interventions were unlikely to be effective for patients with metastatic disease receiving long-term ADT. This perceived ineffectiveness was cited as a reason for not referring men with metastatic disease for specialist help by 35% of clinicians, compared with 15% for locally advanced disease and 2% for localised disease. Indeed, the management of SD in advanced disease cannot be separated from the reality that permanent ADT is likely to be the central aetiology. It means some level of decline in function will be inevitable, and patients will need to be counselled accordingly. However, the loss may not be complete and a reduced level of sexual function may be maintained in some patients⁶. In one small study investigating men undergoing ADT, 19% of subjects were able to continue sexual activity after beginning treatment, although with reduced quality of erections³⁸. Slightly more (22%) reported continuing to have morning or nocturnal erections once a week or more. Another prospective trial measured sexual function of 250 men during intermittent ADT³⁹. Around half had locally advanced or metastatic disease at diagnosis. All patients reported deterioration in sexual function over the first nine months of ADT and just 13% remained sexually active. However, more than half of those who were sexually active at baseline resumed sexual activity while off ADT. All reported improved EF in this time. It is also important to remember that libido and EF may not be the only factors driving sexual activity⁶. Men may wish to continue their intimate relationships despite a lack of sex drive and erections. A range of psychosexual factors play a role in sexual activity and men have highlighted the importance of maintaining relationships, addressing the partner's sexual needs, affection and basic human touch^{24,40}. Hoyt et al found some homosexual men saw sexuality as a part of their public as well as private identity, which meant SD affected not only intimacy with partners but also their identity within the larger community. A broader focus on a wider range of sex practices and

interests may have therapeutic value for couples. The published evidence suggests there is at least a significant minority of men interested in re-establishing some level of satisfactory sexual life while on ADT.

The lack of clear guidance on the best way to manage SD in men on long-term ADT may contribute to a lack of confidence in addressing the issue. Half of the clinicians in this study highlighted a lack of knowledge/training as a barrier to discussing SD with patients and 84% said they would like more training on the subject. Other authors have also found medical providers are not confident addressing issues related to sexuality⁴¹ and this means they may hesitate to refer the patient for specialist help⁴². De Berardis et al found similar barriers to addressing sexual issues and concluded further training was needed for a more proactive approach to screening and management⁴³. There is a need for more research to guide best practice and provide a template for support and interventions. However, even with the current evidence, there are a wide range of management options open to men with ED including psychosexual, medical, lifestyle and surgical options.

Counselling and psychosexual support

The starting point for the management of SD in men with advanced disease may need to be to be the management of expectations. Patients on permanent ADT are unlikely to recover baseline function or sexual desire, whatever interventions are used. Clinicians need to be realistic with men and their partners from an early stage about what can be achieved in terms of rehabilitation. Men who are well-informed about side effects have been shown to report less emotional distress in their adjustment. One study focusing on how 18 couples adapted sexually to ADT highlighted the importance of early information⁴⁴. The authors found greater levels of knowledge helped men counter later feelings of helplessness and inadequacy. Penetrative sex, both vaginal and anal, may not be possible while on ADT and couples may need support to reframe their sexual practices. Instead, the goal should be to encourage the man and his partner to establish a new kind of sexual relationship. To this end, psychosexual support and counselling in alternative sexual practices may be key. Evidence has shown that even brief psychosocial interventions can help couples adjust and adapt²¹. In one study, 84 men were invited to attend a four-week counselling course aimed at improving levels of sexual satisfaction and increasing the use of erectogenic aids⁴⁵. There were significant gains in function and satisfaction for men and their partners and an increased uptake of treatment interventions. Another study focused on the benefits of a six-week education course, including a one-hour lecture/discussion about relationships and sexuality. It found men who attended the course after completing prostate cancer treatment were likely to report significantly lower levels of sexual bother 12 months later⁴⁶. Advice on alternative sexual practices should encourage couples to find pleasure and intimacy in non-penetrative activities such as touching and caressing as well as oral and manual stimulation⁶. Patients should be made aware that erections are not a prerequisite for male orgasm, but that more vigorous and prolonged sexual stimulation may be necessary with a flaccid penis. Programmes such as the sensate focus sex therapy technique are available to help couples recreate sexual satisfaction and intimacy. These approaches also highlight the importance of involving partners when giving support on SD. Men should be encouraged to bring their partners to consultations to encourage open communication.

Erectile dysfunction management

When it comes to managing ED, there is limited evidence to guide practice in the advanced setting. Most studies have focused on rehabilitation in men with localised or locally advanced disease who have completed RT and ADT. However, many of the same principles apply and the same range of interventions can be considered. One retrospective study focused on 57 men who experienced ED while receiving ADT, reported an overall success rate of 47% for all forms of therapy, particularly with multimodal treatment⁴⁷. It is important to take a sexual history and measure baseline EF before initiating therapy as this will be a factor in predicting outcomes and may change the focus of management strategies. If a patient has pre-existing dysfunction that has not responded to previous interventions, then treatment advice may need to be adapted. Validated tools available for baseline assessment include International Index of Erectile Function (IIEF-5), also known as the Sexual Health Inventory for Men (SHIM), and the Expanded Prostate Cancer Index Composite (EPIC) questionnaire⁴⁸. However, even when expectations of erectile rehabilitation are low, efforts can be made to maximise remaining physiological capacity. UK guidelines for the management of ED after radical RT and/or ADT provide a useful guide in the absence of guidelines tailored to advanced disease¹⁰. Early intervention is recommended to prevent further damage to smooth muscle caused by a lack of penile tumescence. There is evidence to suggest men should be prescribed erectogenic aids from the initiation of ADT²¹. Interventions that increase oxygenation in the corporal tissue will help reduce fibrosis and further loss of function. Erectogenic treatments options include PDE5-Is, vacuum erectile devices, PGE1 injections, pellets and creams and penile implants. These treatments may be used sequentially or in combination.

Erectile aids

PDE5-Is are a cost-effective first line therapy for ED and there is some evidence to demonstrate their efficacy during ADT. One small study found 44 per cent of men who reported ED while on ADT responded to PDE5-I monotherapy⁴⁷. However, while these agents will help to improve the quality and duration of the erection, they will not help with the arousal necessary to initiate the erection. Research indicates PDE5-Is usually have a reduced effect in men with low libido caused by ADT compared with those on RT monotherapy^{17,49}. UK guidelines recommend using PDE5-Is in combination with a VED to help with the induction of the erection in absence of sexual desire. The pump exerts external negative pressure on the penis to induce arterial blood flow into the corporal cavernosa. It can be used as an aid to sexual activity or as an effective means to maintain the integrity of the penis by increasing oxygenation and reducing damage to smooth muscle⁵⁰. It also has the benefit of being a relatively cost-effective and a non-invasive treatment option. A survey of UK experts favoured a combination of PDE5-Is and VED as a first line treatment with the timetabling of weekly sexual activity to help couples overcome the lack of spontaneous arousal¹⁰. Prostaglandin E1 (PGE1) can be used as a second line treatment or in combination with PDE5-Is and VED. Alprostadil causes vasodilation and engorgement of the penis and can be administered by intracavernosal injection, as a pellet in the tip of the penis or with an intraurethral applicator. There is little research on the use of PGE1s in men on ADT but since it relies on vasodilation rather than sexual stimulation to work it is likely to be effective in producing an erection. Studies in wider populations of men with ED report success rates of up to 80%, although some report painful sensations or difficulties with administration⁵¹. As a last resort, a penile prosthesis can be considered for those who have not responded to other interventions. This involves the surgical

implantation of either a malleable rod, which does not change size but can be bent upwards for intercourse, or a hydraulic system, which works by pumping fluid into chambers in the penis. Rates of implantation after prostate cancer treatment remain low despite high levels of satisfaction⁵².

Lifestyle interventions

Further to this, lifestyle interventions may be of benefit such as weight loss, exercise, smoking cessation and diet. Loss of EF in prostate cancer patients can be multifactorial and indirect factors should be considered. Weight gain, body feminisation, depression and anxiety linked to ADT may all independently contribute to low libido and loss of sexual function. Research suggests physical exercise and other lifestyle interventions can counter these factors as well as the adverse metabolic effects of ADT itself^{53,54}. Simple measures can improve mental health and confidence, giving men a more positive outlook on rehabilitation. One study of men undergoing ADT, observed significantly higher levels of sexual interest in those who underwent a 12-week exercise programme⁵⁵. The authors said exercise should be considered adjuvant therapy for prostate cancer patients interested in optimizing sexual activity.

Improving care

This study demonstrates the need for improvements in supportive care for men experiencing SD in the advanced prostate cancer setting. Advances in systemic treatments mean survival rates are higher than ever, with around half of men with metastatic disease now surviving more than five years³. This highlights a growing need to address survivorship and quality of life issues. Research has shown patients' emotional wellbeing and quality of life are intricately linked to their sexual lives. Sexual problems can cause high levels of distress, low self-esteem, relationship problems, anxiety, anger, frustration and depression. In the absence of definitive research and clear guidelines, effective strategies remain open to the clinician. These first line interventions – such as PDE5-Is, VEDs, basic counselling and lifestyle changes – are cost-effective and readily available and may prevent the need for more expensive and invasive treatments further down the line. These simple treatments can be initiated without the need for referral to specialist services such as andrology and surgery. This is especially important when there are competing priorities or services are not available as was seen during the Covid-19 pandemic. Clinicians in uro-oncology are well placed to manage SD in conjunction with colleagues in primary care. Relatively small improvements in support may help men and their partners manage and adapt to changes in their sexual function. This could help raise the proportion of men who remain sexually active and improve their quality of life, emotional wellbeing, mental health and confidence.

LIMITATIONS

There are intrinsic limitations when using surveys for research including response and selection bias. Involvement was voluntary so some a degree of self-selection may have been introduced among those willing to give their views on a potentially sensitive subject. There may be a systematic bias between those responded and those who did not. This survey used a convenience sample limited to members of the British Uro-Oncology Group attending the annual conference, so some bias may have been introduced. The survey used was non-validated as no suitable questionnaire was in existence. SD is by its nature a sensitive subject that may cause embarrassment so some answers may not have been a complete representation of current practice.

REFERENCES

1. Prostate Cancer UK (2020) *Prostate cancer becomes most commonly diagnosed cancer in UK*. London [Accessed 20/07/20 at <https://prostatecanceruk.org/about-us/news-and-views/2020/6/most-common-cancer-in-uk>]
2. National Prostate Cancer Audit (2019) NPCA Annual Report 2019. London [Accessed 20/07/20 at <https://www.npca.org.uk/reports/npca-annual-report-2019/>]
3. Office of National Statistics (2019) *Cancer survival in England - adults diagnosed*. London: Office for National Statistics [Accessed 12/6/20 at <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/datasets/cancersurvivalratescancersurvivalinenglandadultsdiagnosed>]
4. Candy B, Jones L, Williams R, Tookman A, King M. Phosphodiesterase type 5 inhibitors in the management of erectile dysfunction secondary to treatments for prostate cancer: findings from a Cochrane systematic review. *BJU International* 2008; 102 (4): 426–431.
5. Miles C, Candy B, Jones L et al. Interventions for sexual dysfunction following treatments for cancer. *Cochrane Database of Systematic Reviews* 2007, Issue 4. Art. No.: CD005540
6. Fode M, Sønksen J. Sexual Function in Elderly Men Receiving Androgen Deprivation Therapy (ADT). *Sex Med Rev*. 2014;2(1):36-46.
7. Downing A, Wright P, Hounscome L, et al. Quality of life in men living with advanced and localised prostate cancer in the UK: a population-based study. *Lancet Oncol* 2019; 20: 436–447
8. Stephenson RA, Mori M, Hsieh YC et al. Treatment of erectile dysfunction following therapy for clinically localized prostate cancer: patient reported use and outcomes from the surveillance, epidemiology, and end results prostate cancer outcomes study. *J Urol* 2005; 174 (2): 646–650.
9. Katz A. What happened? Sexual consequences of prostate cancer and its treatment. *Can Fam Physician* 2005; 51: 977–972.
10. White I, Wilson J, Aslet P et al. Development of UK guidance on the management of erectile dysfunction resulting from radical radiotherapy and androgen deprivation therapy for prostate cancer. *Int J Clin Pract* 2015; 69 (1): 106–123
11. Parekh A, Chen MH, Hoffman KE, et al. Reduced penile size and treatment regret in men with recurrent prostate cancer after surgery, radiotherapy plus androgen deprivation, or radiotherapy alone. *Urology*. 2013;81(1):130-134
12. Tran S, Boissier R, Perrin J, Karsenty G, Lechevallier E. Review of the Different Treatments and Management for Prostate Cancer and Fertility. *Urology*. 2015;86(5):936-941
13. Mazzola CR, Mulhall JP. Impact of androgen deprivation therapy on sexual function. *Asian J Androl*. 2012;14(2):198-203
14. Tombal B, Borre M, Rathenborg P, et al. Enzalutamide monotherapy in hormone-naive prostate cancer: primary analysis of an open-label, single-arm, phase 2 study. *Lancet Oncol*. 2014;15(6):592-600
15. Mahmood J, Shamah AA, Creed TM et al. Radiation-induced erectile dysfunction: Recent advances and future directions. *Adv Radiat Oncol* 2016 Jun 3;1(3):161-169.

16. Stember DS, Mulhall JP. The concept of erectile function preservation (penile rehabilitation) in the patient after brachytherapy for prostate cancer. *Brachytherapy* 2012; 11(2): 87–96.
17. Teloken PE, Ohebshalom M, Mohideen N, Mulhall JP. Analysis of the impact of androgen deprivation therapy on sildenafil citrate response following radiation therapy for prostate cancer. *J Urol*. 2007;178(6):2521-2525
18. McCabe MP, Althof SE. A systematic review of the psychosocial outcomes associated with erectile dysfunction: does the impact of erectile dysfunction extend beyond a man's inability to have sex? *J Sex Med* 2014;11:347–63
19. Bokhour B, Clark JA, Inui TS, Silliman RA, Talcott JA. Sexuality after treatment for early prostate cancer: exploring the meanings of 'Erectile Dysfunction'. *J Gen Intern Med* 2001; 16 (10): 649–655.
20. Hanley N, Mireskandari S, Juraskova I. The struggle towards 'the new normal': a qualitative insight into psychosexual adjustment to prostate cancer. *BMC Urol* 2014; 14: 56.
21. Elliott S, Latini DM, Walker LM, Wassersug R, Robinson JW. Androgen deprivation therapy for prostate cancer: recommendations to improve patient and partner quality of life. *J Sex Med* 2010;7: 2996–3010.
22. Donovan KA, Gonzalez BD, Nelson AM, Fishman MN, Zachariah B, Jacobsen PB. Effect of androgen deprivation therapy on sexual function and bother in men with prostate cancer: A controlled comparison. *Psychooncology*. 2018;27(1):316-324
23. Rosser BRS, Merengwa E, Capistrant BD, et al. Prostate Cancer in Gay, Bisexual, and Other Men Who Have Sex with Men: A Review. *LGBT Health*. 2016;3(1):32-41
24. Hoyt MA, Frost DM, Cohn E, Millar BM, Diefenbach MA, Revenson TA. Gay men's experiences with prostate cancer: Implications for future research. *J Health Psychol*. 2020;25(3):298-310
25. Dowsett GW, Lyons A, Duncan D, Wassersug RJ. Flexibility in men's sexual practices in response to iatrogenic erectile dysfunction after prostate cancer treatment. *Sex Med* 2014;2:115–120.
26. Rhee H, Gunter JH, Heathcote P, et al. Adverse effects of androgen-deprivation therapy in prostate cancer and their management. *BJU Int*. 2015;115 Suppl 5:3-13.
27. Cherrier MM, Higano CS. Impact of androgen deprivation therapy on mood, cognition, and risk for AD. *Urol Oncol*. 2020;38(2):53-61.
28. Tavlarides AM, Ames SC, Diehl NN, et al. Evaluation of the association of prostate cancer-specific anxiety with sexual function, depression and cancer aggressiveness in men 1 year following surgical treatment for localized prostate cancer. *Psychooncology*. 2013;22(6):1328-1335
29. Roth AJ, Weinberger MI, Nelson CJ. Prostate cancer: psychosocial implications and management. *Future Oncol*. 2008;4(4):561-568
30. Watts S, Leydon G, Birch B, et al. Depression and anxiety in prostate cancer: a systematic review and meta-analysis of prevalence rates. *BMJ Open*. 2014;4(3):e003901. Published 2014 Mar 13
31. Dyer A, Kirby M, White ID, et al. Management of erectile dysfunction after prostate cancer treatment: cross-sectional surveys of the perceptions and experiences of patients and healthcare professionals in the UK. *BMJ Open* 2019;9:e030856

32. Forbat L, White I, Marshall-Lucette S, Kelly D. Discussing the sexual consequences of treatment in radiotherapy and urology consultations with couples affected by prostate cancer. *BJU Int* 2001; 109 (1): 98–103
33. Krouwel EM, Albers LF, Nicolai MPJ, et al. Discussing Sexual Health in the Medical Oncologist's Practice: Exploring Current Practice and Challenges [published online ahead of print, 2019 Jun 17]. *J Cancer Educ*. 2019;10.1007/s13187-019-01559-6
34. Bond CB, Jensen PT, Groenvold M, Johnsen AT. Prevalence and possible predictors of sexual dysfunction and self-reported needs related to the sexual life of advanced cancer patients. *Acta Oncol*. 2019;58(5):769-775.
35. Kinnaird, W, & Stewart-Lord, A. A qualitative study exploring men's experience of sexual dysfunction as a result of radiotherapy and androgen deprivation therapy to treat prostate cancer. *J Radiother Pract*, 2020: 1-4.
36. Gilbert E, Ussher JM, Perz J. Sexuality After Gynaecological Cancer: A Review of the Material, Intrapsychic and Discursive Aspects of Treatment on Women's Sexual-Wellbeing. *Maturitas*. 2011;70:42–57.
37. Bratus D, Bratus T. Men with serious chronic illnesses and malignancies are less likely to seek treatment for erectile dysfunction. *Int J Impot Res*. 2020;32(2):180-185.
38. Rousseau L, Dupont A, Labrie F, Couture M. Sexuality changes in prostate cancer patients receiving antihormonal therapy combining the antiandrogen flutamide with medical (LHRH agonist) or surgical castration. *Arch Sex Behav*. 1988;17(1):87-98
39. Schover LR. Sexual healing in patients with prostate cancer on hormone therapy. *Am Soc Clin Oncol Educ Book*. 2015;e562-e566
40. Klaeson K, Sandell K, Bertero CM. Sexuality in the context of prostate cancer narratives. *Qual Health Res* 2012;22:1184– 94.
41. Olsson C, Berglund AL, Larsson M, Athlin E. Patient's sexuality - a neglected area of cancer nursing? *Eur J Oncol Nurs*. 2012;16(4):426-431.
42. Darwish-Yassine M, Berenji M, Wing D, et al. Evaluating long-term patient-centered outcomes following prostate cancer treatment: findings from the Michigan Prostate Cancer Survivor study. *J Cancer Surviv*. 2014;8:121–130.
43. De Berardis G, Pellegrini F, Franciosi M, et al. Management of erectile dysfunction in general practice. *J Sex Med* 2009;6:1127–34.
44. Walker LM, Robinson JW. Sexual adjustment to androgen deprivation therapy: struggles and strategies. *Qual Health Res*. 2012;22(4):452-465
45. Canada AL, Neese LE, Sui D, Schover LR. Pilot intervention to enhance sexual rehabilitation for couples after treatment for localized prostate carcinoma. *Cancer* 2005; 104: 2689–700.
46. Lepore SJ, Helgeson VS, Eton DT, Schulz R. Improving quality of life in men with prostate cancer: a randomized controlled trial of group education interventions. *Health Psychol* 2003; 22(5): 443–52.
47. DiBlasio CJ, Malcolm JB, Derweesh IH, et al. Patterns of sexual and erectile dysfunction and response to treatment in patients receiving androgen deprivation therapy for prostate cancer. *BJU Int*. 2008;102(1):39-43
48. Schroeck FR, Donatucci CF, Smathers EC, et al. Defining potency: a comparison of the International Index of Erectile Function short version and the Expanded Prostate Cancer Index Composite. *Cancer*. 2008;113(10):2687-2694
49. Incrocci L, Koper PC, Hop WC, Slob AK. Sildenafil citrate (Viagra) and erectile dysfunction following external beam radiotherapy for prostate cancer: a

randomized, double-blind, placebo-controlled, cross-over study. *Int J Radiat Oncol Biol Phys.* 2001;51(5):1190-1195

50. Welliver RC Jr, Mechlin C, Goodwin B, Alukal JP, McCullough AR. A pilot study to determine penile oxygen saturation before and after vacuum therapy in patients with erectile dysfunction after radical prostatectomy. *J Sex Med* 2014; 11(4): 1071–7.
51. Porst H. The Rationale for Prostaglandin E1 in Erectile Failure: A Survey of Worldwide Experience, *J Urol.* 1996 Mar; 155 (3):802-815
52. Tal R, Jacks LM, Elkin E, Mulhall JP. Penile implant utilization following treatment for prostate cancer: analysis of the SEER-Medicare database. *J Sex Med.* 2011;8(6):1797-1804
53. Lam T, Birzniece V, McLean M, Gurney H, Hayden A, Cheema BS. The Adverse Effects of Androgen Deprivation Therapy in Prostate Cancer and the Benefits and Potential Anti-oncogenic Mechanisms of Progressive Resistance Training. *Sports Med Open.* 2020;6(1):13. Published 2020 Feb 13
54. Ahmadi H, Daneshmand S. Androgen deprivation therapy: evidence-based management of side effects. *BJU Int.* 2013;111(4):543-548
55. Cormie P, Newton RU, Taaffe DR, et al. Exercise maintains sexual activity in men undergoing androgen suppression for prostate cancer: a randomized controlled trial. *Prostate Cancer Prostatic Dis.* 2013;16(2):170-175

TABLES

Table 1: Barriers to discussing sexual dysfunction

Barrier	No. of responses	Agree (%)	Disagree (%)
Lack of time	54	43 (80%)	11 (20%)
Patient reluctant/not ready to discuss	52	35 (67%)	17 (33%)
Advanced stage of disease	52	29 (56%)	23 (44%)
Lack of confidence in management strategies	54	29 (54%)	25 (46%)
Language/ethnicity/cultural/religious factors	51	26 (51%)	25 (49%)
Lack of knowledge/training	53	26 (49%)	27 (51%)
Advanced age of patient	53	25 (47%)	28 (53%)
Presence of third party (eg partner, relative)	52	24 (46%)	28 (54%)
Concerned about embarrassing patient	53	19 (36%)	34 (64%)
Inappropriate setting to discuss	51	18 (35%)	33 (65%)
Support services are unavailable	52	16 (31%)	36 (69%)
Patient does not have a partner	51	8 (16%)	43 (84%)
Embarrassed/uncomfortable discussing	51	7 (14%)	44 (86%)
Patient is different sexuality	51	6 (12%)	45 (88%)
Not my role to discuss	51	5 (10%)	46 (90%)

FIGURE LEGENDS

Figure 1: Treating erectile dysfunction after radical radiotherapy and androgen deprivation therapy for prostate cancer (Macmillan/Prostate Cancer UK guide based on White et al⁸ and reproduced with permission)

Figure 2: How often do you discuss the impact of RT and/or ADT on sexual function before treatment commences?

Figure 3: How often do you make an assessment of a patient's baseline sexual function before treatment commences?

Figure 4: Who is primarily responsible for managing sexual dysfunction in your department?

Figure 5: If available, how often do you refer patients to a specialist sexual dysfunction clinic?

Figure 6: If you do not refer all your patients to a specialist sexual dysfunction clinic, what are the reasons?

Figure 7: During follow-up, how often do you discuss the impact of prostate cancer treatment on sexual function with:

Figure 8: Which patients do you think would benefit from the following management strategies for sexual dysfunction as a result of prostate cancer treatment?

Appendix A:

Sexual dysfunction management survey

Dear BUG member

We would most grateful if you would complete this short questionnaire investigating the management of sexual dysfunction linked to radiotherapy and/or androgen deprivation therapy for patients with prostate cancer.

The intention is to publish the findings so the data can be shared more widely. Responses will remain anonymous. The survey should take around five minutes.

Thank you very much in advance for your time.

1. Do you currently treat prostate cancer?

Yes ☐

No ☐ (If the answer is no, please do not proceed with this survey)

2. How long have you worked as a urological oncologist?

0-5 years ☐

6-10 years ☐

11-20 years ☐

21+ years ☐

Other grade ☐ (please specify).....

3. Are you:

Male ☐

Female ☐

The first section of this survey relates to the management of sexual dysfunction in patients with all stages of prostate cancer

4. How often do you discuss the impact of radiotherapy and/or androgen deprivation therapy on sexual function before treatment commences?

	Never	Occasionally	Usually	Always
Localised disease:	☐	☐	☐	☐
Locally advanced disease:	☐	☐	☐	☐
Metastatic disease:	☐	☐	☐	☐

Additional comments:

5. How often do you make an assessment of a patient's baseline sexual function before treatment commences?

	Never	Occasionally	Usually	Always
Localised disease:	☐	☐	☐	☐
Locally advanced disease:	☐	☐	☐	☐
Metastatic disease:	☐	☐	☐	☐

Additional comments:

6. Who is primarily responsible for managing sexual dysfunction in your department? (Please pick one option)

Oncologist	☐
Clinical nurse specialist	☐
Andrologist/Specialist sexual dysfunction	☐
On-treatment review team	☐
GP	☐
Patient	☐
Other (please give detail below)	☐

Additional comments:

7. Are you able to refer patients to a specialist sexual dysfunction clinic?

- Yes ☐
- No ☐

Additional comments:

8. If yes, how often do you refer patients to a specialist sexual dysfunction clinic?

	Never	Occasionally	Usually	Always
Localised disease:	☐	☐	☐	☐
Locally advanced disease:	☐	☐	☐	☐
Metastatic disease:	☐	☐	☐	☐

Additional comments:

--

9. If you do not refer all your patients to a specialist sexual dysfunction clinic, what are the reasons? (Tick all that apply)

	No clinic available	Sexual dysfunction already managed elsewhere	Treatment unlikely to be effective	Patient declined	Other (Please detail below)
Localised disease:	☐	☐	☐	☐	☐
Locally advanced disease:	☐	☐	☐	☐	☐
Metastatic disease:	☐	☐	☐	☐	☐

Additional comments:

--

Additional comments:

11. How often do patients raise the issue of sexual dysfunction without being prompted?

	Never	Occasionally	Usually	Always
Patients treated with radical radiotherapy and ADT	☐	☐	☐	☐
Patients treated with radical radiotherapy who are still receiving ADT or other systemic therapies	☐	☐	☐	☐
Patients with metastatic disease treated with ADT +/- other systemic treatments +/- radiotherapy	☐	☐	☐	☐

Additional comments:

12. Which patients do you think would benefit from the following management strategies for sexual dysfunction as a result of prostate cancer treatment? (Tick all that apply)

	Patients treated with radical radiotherapy and ADT	Patients treated with radical radiotherapy who are still receiving ADT or other systemic therapies	Patients with metastatic disease treated with ADT +/- other systemic treatments +/- radiotherapy
Lifestyle changes	☐	☐	☐
Pelvic floor muscle exercises	☐	☐	☐
Counselling	☐	☐	☐
Vacuum Erection Device	☐	☐	☐
PDE5-inhibitors	☐	☐	☐
Pellets (transurethral alprostadil)	☐	☐	☐
Topical cream (transdermal alprostadil)	☐	☐	☐
Penile injections	☐	☐	☐
Other (please detail below)	☐	☐	☐

Additional comments:

Additional comments:

Additional Comments:

14. What would improve the management of sexual dysfunction?

	Agree	Disagree
More time in clinic	☐	☐
More training	☐	☐
Dedicated sexual dysfunction clinic	☐	☐
Specialist support	☐	☐
Other	☐	☐

Additional comments:

Thank you for completing this survey

Please hand the completed form in at the BUG Registration Desk

APPENDIX B

Figure 1: Participant Characteristics

Respondents (n=63)	
Do you treat prostate cancer	
Yes	61 (97%)
No	2 (3%)
Gender	
Male	21 (34%)
Female	40 (66%)
Experience as uro-oncologist	
0-5yrs	14 (23%)
6-10yrs	14 (23%)
11-20yrs	23 (38%)
21yrs+	8 (13%)
Other profession ^a	2 (3%)

^a Consultant therapeutic radiographer

Figure 2: How often do patients raise the issue of sexual dysfunction without being prompted?

Figure 3: What would improve the management of sexual dysfunction?

Figure 4: Barriers to discussing sexual dysfunction: a subset analysis according to clinician gender (% agreeing)