NICE National Institute for Health and Care Excellence

Professional Expert Questionnaire

Technology/Procedure name & indication: **IP1316/2 Biodegradable spacer insertion to reduce rectal toxicity during radiotherapy for prostate cancer**

Your information

Name:	Dr Albert Augustine Edwards
Job title:	Consultant Clinical Oncologist
Organisation:	Maidstone and Tunbridge Wells NHS Trust
Email address:	
Professional organisation or society membership/affiliation:	GMC
Nominated/ratified by (if applicable):	Click here to enter text.
Registration number (e.g. GMC, NMC, HCPC)	4628578

How NICE will use this information: the advice and views given in this questionnaire will form part of the information used by NICE and its advisory committees to develop guidance or a medtech innovation briefing on this procedure/technology. Information may be disclosed to third parties in accordance with the Freedom of Information Act 2000 and the Data Protection Act 2018, complying with data sharing guidance issued by the Information Commissioner's Office. Your advice and views represent your individual opinion and not that of your employer, professional society or a consensus view. Your name, job title, organisation and your responses, along with your declared interests will also be published online on the NICE website as part of the process of public consultation on the draft guidance, except in circumstances but not limited to, where comments are considered voluminous, or publication would be unlawful or inappropriate.

For more information about how we process your data please see our privacy notice.

☒ I give my consent for the information in this questionnaire to be used and may be published on the NICE website as outlined above. If consent is NOT given, please state reasons below:

Click here to enter text.

Please answer the following questions as fully as possible to provide further information about the procedure/technology and/or your experience.

Please note that questions 10 and 11 are applicable to the Medical Technologies Evaluation Programme (MTEP). We are requesting you to complete these sections as future guidance may also be produced under their work programme.

1	Please describe your level of experience with the procedure/technology, for example: Are you familiar with the procedure/technology?	I am familiar with the inserting and using SpaceOAR and SpaceOAR VUE biodegradable hydrogel peri-rectal spacers in patients with prostate cancer undergoing treatment with prostate brachytherapy, prostate external beam radiotherapy or a combination of the two. I have been trained to inserted SpaceOAR and SpaceOAR VUE by the manufacturers, Boston Scientific.
	Have you used it or are you currently using it?	Yes. I am using this at Maidstone Hospital in Kent.
	− Do you know how widely this procedure/technology is used in the NHS or what is the likely speed of uptake?	SpaceOAR not funded by the NHS, but there have been an increasing number of NHS centres that have been inserting SpaceOAR via the Innovation and Technology Payment (ITP) Programme in England over the last 2 to 3 years. Maidstone Hospital was among the first 10 hospital inserting SpaceOARs via the ITP.
	− Is this procedure/technology performed/used by clinicians in specialities other than your own?	SpaceOAR insertion is performed mainly by clinicians, mostly Urologists. I am one of a smaller number of Clinical Oncologists trained to insert SpaceOARs. I work with a Macmillan Consultant Radiographer who has also been trained to insert SpaceOARs and I am aware of at least one Nurse in England who has been trained to insert them.
	− If your specialty is involved in patient selection or referral to another specialty for this	Most of the patients I am referred have been diagnosed with prostate cancer. I have a specialist interest in prostate LDR brachytherapy and I treat a lot of patients with image-guided external

	procedure/technology, please indicate your experience with it.	beam radiotherapy (IGRT). I have performed a large proportion of the 150 or so SpaceOAR implants at Maidstone over the last two years.
2	– Please indicate your research experience relating to this procedure (please choose one or more if relevant):	I have done bibliographic research on this procedure. I have done research on this procedure in laboratory settings (e.g. device-related research). I have done clinical research on this procedure involving patients or healthy volunteers. I have published this research. **I have had no involvement in research on this procedure.** Other (please comment) **Over the last few weeks, I have participated in an expert Delphi panel organised on behalf of Boston Scientific to try to draw up consensus guidelines on the appropriate use of SpaceOAR. We are hoping to publish our consensus guidelines at the end of the process.**
3	How innovative is this procedure/technology, compared to the current standard of care? Is it a minor variation or a novel approach/concept/design? Which of the following best describes the procedure (please choose one):	SpaceOAR and more recently, SpaceOAR VUE are novel tool to protect the anterior rectal wall in patients undergoing radiation-based treatment of prostate cancer (prostate external beam radiotherapy, prostate LDR or HDR brachytherapy, or a combination of the two modalities). It works by temporarily displacing the anterior rectal wall away from the posterior surface of the prostate gland during the period in which external beam radiotherapy or prostate HDR brachytherapy is being delivered to the prostate, or during the first 3 to 6 months after the prostate LDR brachytherapy implant until the SpaceOAR has biodegraded. Established practice and no longer new. A minor variation on an existing procedure, which is unlikely to alter the procedure's safety and efficacy.

		Definitely novel and of uncertain safety and efficacy. **<u>The first in a new class of procedure.</u>**
4	Does this procedure/technology have the potential to replace current standard care or would it be used as an addition to existing standard care?	This procedure is a modification of the current standard of care for planning prostate brachytherapy and external beam radiotherapy. It is used in addition to existing technologies for delivering tumorical radiation to prostate cancer (such as prostate LDR brachytherapy, prostate HDR brachytherapy, image-guided X-ray radiotherapy, stereotactic radiotherapy and proton beam therapy). By reducing the radiation dose delivered to the anterior rectal wall, it will reduce the numbers of patients who develop late radiation proctitis months or years after prostate radiotherapy or brachytherapy, sparing them from years of unpleasant symptoms and poor quality of life and the complications of attempted treatments of radiation proctitis. Avoid this toxicity of radiation therapy would conserve the NHS resources that would be used to treat these treatment-related complications.

Current management

5	Please describe the current standard of care that is used in the NHS.	Patients undergoing radiotherapy have a CT planning scan in the position they will later be treated on the radiotherapy machine (Linear Accelerator or Proton Beam machine). A radiotherapy plan is generated aiming to cover the target (i.e. the prostate gland) in an acceptable fashion with homogenous radiation distribution delivering the prescribed dose while not exceeded the accepted doses to nearby organs-at-risk (such as the rectum, bladder, intestines, urethra, penile bulb and the heads of the femora). Patients receiving prostate LDR or HDR brachytherapy have these radiation doses estimated during the planning stage or assessed in real time during the implantation.

6	Are you aware of any other competing or alternative procedure/technology available to the NHS which have a similar function/mode of action to this? If so, how do these differ from the procedure/technology described in the briefing?	Barrigel is a competitor. Barrigel does not require hydro-dissection under trans-rectal ultrasound (TRUS) guidance to create a space for the hydrogel to occupy. Barrigel is directly inserted into the peri-rectal space using a series of small syringes of the hydrogel. Barrigel can potentially be dissolved if the hydrogel implant is unacceptable. SpaceOAR has to be left to biodegrade over 3 to 6 months. Barrigel allows ultrasound to pass through it so that the prostate can still be visualised after the hydrogel has been inserted. SpaceOAR creates an ultrasound artefact, particularly if air bubbles are introduced into the perirectal space at the end of injection of the two liquids, which obscures the appearance of the prostate gland on the TRUS imaging after it has been injected in. I am not aware of the publication of any substantial randomised trial of clinical use of Barrigel. SpaceOAR has the support of published randomised trial data. The ITP Programme has facilitated the adoption of SpaceOAR insertion in a large number of hospital in the England. Barrigel was not part of an ITP Programme.

Potential patient benefits and impact on the health system

7	What do you consider to be the potential benefits to patients from using this procedure/technology?	Reduction in the incidence of substantial late radiation proctitis (affecting the rectum)
8	Are there any groups of patients who would particularly benefit from using this procedure/technology?	Patients with inflammatory bowel disease such as Crohn's disease and Ulcerative Colitis. Patients with Diabetes and patients who are on long-term anticoagulation.
9	Does this procedure/technology have the potential to change the current pathway or clinical outcomes to benefit the healthcare system? Could it lead, for example, to improved outcomes, fewer hospital visits or less invasive treatment?	Reduce referrals for investigation of rectal bleeding/pain/mucus due to late radiation proctitis, fewer hospital visits and procedures such as flexible and rigid sigmoidoscopies, and reduction of use of NHS resources for this. Some treatments for radiation proctitis are invasive.
10 - MTEP	Considering the care pathway as a whole, including initial capital and possible future costs avoided, is the procedure/technology likely to cost more or less than current standard care, or about the same? (in terms of staff, equipment, care setting etc)	The cost of the SpaceOAR hydrogel spacer itself, the operating theatre time, staff time and equipment would need to be compared to the clinic time, medical staff time and equipment used to investigate and treat radiation proctitis. I estimate that for patients expected to benefit most from SpaceOAR, the former substantially outweighs the latter.
11 - MTEP	What do you consider to be the resource impact from adopting this procedure/technology (is it likely to cost more or less than standard care, or about same-in terms of staff, equipment, and care setting)?	I think the resource impact from adopting SpaceOAR will turn out to be negative (i.e. it is likely to cost less than standard care). Data on Quality of Life and acute and late treatment-related toxicity should have been collected during the ITP process but was not.
12	What clinical facilities (or changes to existing facilities) are needed to do this procedure/technology safely?	Either a small operating theatre with an operating couch, a transrectal ultrasound (TRUS) machine with an appropriate ultrasound probe to show axial and longitudinal real-time images of the prostate gland, anterior rectum and perineum. A special chair can be used to assess the perineum with the TRUS probe within the rectum, in the outpatient clinic. An anaesthetist and operating team is required if the patient needs a general anaesthetic, otherwise a local perineal

		anaesthetic is administered. Patient receiving a SpaceOAR should have an MRI scan of the pelvis to visualise the SpaceOAR accurately for prostate radiotherapy planning purposes and to exclude infiltration of the rectal wall by the hydrogel.
13	Is any specific training needed in order to use the procedure/technology with respect to efficacy or safety?	Yes. Currently, the manufacturers Boston Scientific directly supervise the first 6 to 10 SpaceOAR implants and instruct practitioners learning to perform the procedure.

Safety and efficacy of the procedure/technology

14	What are the potential harms of the procedure/technology? Please list any adverse events and potential risks (even if uncommon) and, if possible, estimate their incidence: Adverse events reported in the literature (if possible, please cite literature) Anecdotal adverse events (known from experience) Theoretical adverse events	The hydrogel can be incorrectly inserted into the outer wall or inner mucosal layer of the rectum if the inserting needle is misplaced. Rectal wall infiltration by the SpaceOAR hydrogel is rare in experienced hands but can cause rectal pain. I have seen two patients who had some hydrogel pass out via the urethra with urine after a prostate brachytherapy seed implant where SpaceOAR had been inserted at the end of the procedure. The Royal Marsden Hospital team wrote a commentary in Lancet Oncology in January 2021 about the adverse events reported with SpaceOAR insertion over a five-year time period in the FDA MAUDE database: https://doi.org/10.1016/S1470-2045(20)30639-2 They were critical of the randomised phase 3 clinic trial that was the basis of approval for SpaceOAR by NICE on safety grounds,
15	Please list the key efficacy outcomes for this procedure/technology?	Incidence and severity of late rectal toxicity after prostate external beam radiotherapy or prostate brachytherapy or the combination of both. Patient Quality of Life.
16	Please list any uncertainties or concerns about the efficacy and safety of this procedure/?	I think the procedure of inserting SpaceOAR and SpaceOAR VUE is operator dependent. The quality of the SpaceOAR implants should ideally be assessed. This is an example of a proposal to measure the quality of SpaceOAR implant insertion: https://doi.org/10.1016/j.prro.2020.02.006

17	Is there controversy, or important uncertainty, about any aspect of the procedure/technology?	I think that SpaceOAR relies on the inverse square law of physics. The intensity of radiation decreases rapidly with increasing distance from the source (radiating in all directions). Thus increasing the separation between the posterior prostate gland surface and the anterior rectal wall will decrease the radiation dose the rectal wall receives. I don't believe that is controversial.
18	If it is safe and efficacious, in your opinion, will this procedure be carried out in (please choose one):	Most or all district general hospitals. ~~A minority of hospitals, but at least 10 in the UK.~~ ~~Fewer than 10 specialist centres in the UK~~. ~~Cannot predict at present.~~

Abstracts and ongoing studies

19	Please list any abstracts or conference proceedings that you are aware of that have been recently presented / published on this procedure/technology (this can include your own work). Please note that NICE will do a comprehensive literature search; we are only asking you for any very recent abstracts or conference proceedings which might not be found using standard literature searches. You do not need to supply a comprehensive reference list but it will help us if you list any that you think are particularly important.	I can't think of any recent ones.
20	Are there any major trials or registries of this procedure/technology currently in progress? If so, please list.	Not that I am aware of.

Other considerations

21	Approximately how many people each year would be eligible for an intervention with this procedure/technology, (give either as an estimated number, or a proportion of the target population)?	Using this American publication based on 37621 men in the general community diagnosed as having prostate cancer between 2004 and 2007, 96.9% of these men had T1 or T2 disease. My conservative estimate would be that at least 50% of men diagnosed with prostate cancer would happen to have curable localised T1 or T2 that would be amenable to SpaceOAR use during prostate brachytherapy or prostate external beam radiotherapy. My estimate of how many men with prostate cancer who would be expected to particularly benefit from SpaceOAR (e.g. men on anticoagulation, with inflammatory bowel disease, diabetes or heavy smokers) would be 5% or less.
22	Are there any issues with the usability or practical aspects of the procedure/technology?	You need to have a TRUS machine with the right rectal probe and the skills to use it, the ability to perform a local anaesthetic block of the perineum, and insert needles into the male perineum under TRUS guidance.
23	Are you aware of any issues which would prevent (or have prevented) this procedure/technology being adopted in your organisation or across the wider NHS?	The expense of the product and the lack of trained practitioners with the equipment to insert SpaceOAR and SpaceOAR VUE.
24	Is there any research that you feel would be needed to address uncertainties in the evidence base?	I think that on-going prostate radiotherapy trials which have allowed the inclusion of some patients with SpaceOAR will provide a small amount of prospectively collected data on the clinical outcomes and treatment-related toxicity experienced by them. I recommended that the original company which manufactured and marketed SpaceOAR originally, Augmenix, seek out the Chief Investigators of such clinical trials 2 or 3 years ago. I am aware that the PIVOTALboost prostate radiotherapy trial allows SpaceOARs to be used and that the PACE trials of stereotactic prostate radiotherapy will allow a proportion of their patients to have SpaceOAR.
25	Please suggest potential audit criteria for this procedure/technology. If known, please describe: − Beneficial outcome measures. These should include short- and long-term	Beneficial outcome measures: Patient Quality of Life

	clinical outcomes, quality-of-life measures and patient-related outcomes. Please suggest the most appropriate method of measurement for each and the timescales over which these should be measured. – Adverse outcome measures. These should include early and late complications. Please state the post procedure timescales over which these should be measured:	Adverse outcome measures: Long-term/Late rectal toxicity measured at 2 years, 3 years and 5 years.

Further comments

26	Please add any further comments on your particular experiences or knowledge of the procedure/technology,	None

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Declarations of interests

Please state any potential conflicts of interest relevant to the procedure/technology (or competitor technologies) on which you are providing advice, or any involvements in disputes or complaints, in the previous **12 months** or likely to exist in the future. Please use the NICE policy on declaring and managing interests as a guide when declaring any interests. Further advice can be obtained from the NICE team.

Type of interest *	Description of interest	Relevant dates	
		Interest arose	Interest ceased
Direct - financial	I have been a member of an Advisory Board for Boston Scientific on the use of SpaceOAR and I have given 2 presentations on the use of SpaceOAR and SpaceOAR VUE on behalf of Boston Scientific in a webinar and in a virtual presentation at the ESTRO meeting on 28/8/2021. I insert SpaceOAR and SpaceOAR VUE for prostate cancer patients in the NHS and the private sector.	**2019 onwards**	
Choose an item.			
Choose an item.			

☒ I confirm that the information provided above is complete and correct. I acknowledge that any changes in these declarations during the course of my work with NICE, must be notified to NICE as soon as practicable and no later than 28 days after the interest arises. I am aware that if I do not make full, accurate and timely declarations then my advice may be excluded from being considered by the NICE committee.

Please note, all declarations of interest will be made publicly available on the NICE website.

Print name:	**Dr Albert Augustine Edwards**
Dated:	**29 September 2021**

NICE National Institute for Health and Care Excellence

Professional Expert Questionnaire

Technology/Procedure name & indication: **IP1316/2 Biodegradable spacer insertion to reduce rectal toxicity during radiotherapy for prostate cancer**

Your information

Name:	Amit Bahl
Job title:	Consultant Clinical Oncologist
Organisation:	University Hospitals Bristol NHS Trust
Email address:	amitbahl@doctors.org.uk
Professional organisation or society membership/affiliation:	British Uro-Oncology Group
Nominated/ratified by (if applicable):	Click here to enter text.
Registration number (e.g. GMC, NMC, HCPC)	GMC 4577988

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Please note that questions 10 and 11 are applicable to the Medical Technologies Evaluation Programme (MTEP). We are requesting you to complete these sections as future guidance may also be produced under their work programme.

1	Please describe your level of experience with the procedure/technology, for example: Are you familiar with the procedure/technology? Have you used it or are you currently using it? − Do you know how widely this procedure/technology is used in the NHS or what is the likely speed of uptake? − Is this procedure/technology performed/used by clinicians in specialities other than your own? − If your specialty is involved in patient selection or referral to another specialty for this	I have offered this peocedure both in the NHS through the ITP programme and also in private sector. I have trained colleagues in this procedure. I have commenced a Service Evaluation Programme regarding this in the NHS in Bristol Haematology and Oncology Centre and are currently offering this procedure to the eligible patients in the NHS. This procedure is offered in several hospitals in the country, predominantly through NHS ITP programme. The procedure is performed by Urological surgeons and oncologists. In my practice, I am specifically involved in selection of patients and performing the procedure. I have performed more than 60 such procedures over the last 3 years.

	procedure/technology, please indicate your experience with it.	
2	– Please indicate your research experience relating to this procedure (please choose one or more if relevant):	I have done bibliographic research on this procedure. Urology 2021 May 23;S0090-4295(21)00421-0. **SpaceOAR Hydrogel Spacer for Reducing Radiation Toxicity During Radiotherapy for Prostate Cancer. A Systematic Review** Nigel Armstrong [1], Amit Bahl [2], Michael Pinkawa [3], Steve Ryder [4], Charlotte Ahmadu [4], Janine Ross [4], Samir Bhattacharyya [5], Emily Woodward [5], Suzanne Battaglia [5], Jean Binns [5], Heather Payne [6] Int J Clin Pract. 2021 Aug;75(8):e14338. **Rectal spacers in patients with prostate cancer undergoing radiotherapy: A survey of UK uro-oncologists** Amit Bahl [1], Amarnath Challapalli [1], Suneil Jain [2], Heather Payne [3]
3	How innovative is this procedure/technology, compared to the current standard of care? Is it a minor variation or a novel approach/concept/design? Which of the following best describes the procedure (please choose one):	This is established practice in US radiation treatment for prostate cacer radiotherapy. In UK it will be a novel change to current treatment pathway with associated benefits. Definitely novel and of uncertain safety and efficacy. The first in a new class of procedure.

4	Does this procedure/technology have the potential to replace current standard care or would it be used as an addition to existing standard care?	This will be an addition to the current treatment pathway.

Current management

5	Please describe the current standard of care that is used in the NHS.	Currently there is no rectal spacer used in the delivery of prostate radiotherapy in the NHS
6	Are you aware of any other competing or alternative procedure/technology available to the NHS which have a similar function/mode of action to this? If so, how do these differ from the procedure/technology described in the briefing?	There are rectal spacers which are available in the commercial sector. In the NHS I am only aware of Space OAR Hydrogel through the NHS ITP programme.

Potential patient benefits and impact on the health system

7	What do you consider to be the potential benefits to patients from using this procedure/technology?	Reduce rectal side-effects from prostate radiotherapy
8	Are there any groups of patients who would particularly benefit from using this procedure/technology?	Potentially those with pre-existing bowel problems and those being treated with ultrahypofractionated radiotherapy or HDR brachytherapy.
9	Does this procedure/technology have the potential to change the current pathway or clinical outcomes to benefit the healthcare system? Could it lead, for example, to improved outcomes, fewer hospital visits or less invasive treatment?	This will require incorporation to the current treatment pathway and potentially would reduce the long-term side-effects thereby benefitting the patients and healthcare system.
10 - MTEP	Considering the care pathway as a whole, including initial capital and possible future costs avoided, is the procedure/technology likely to cost more or less than current standard care, or about the same? (in terms of staff, equipment, care setting etc)	This needs to be evaluated
11 - MTEP	What do you consider to be the resource impact from adopting this procedure/technology (is it likely to cost more or less than standard care, or about same-in terms of staff, equipment, and care setting)?	It will require costs upfront but has potential to reduce costs for side-effects management subsequently
12	What clinical facilities (or changes to existing facilities) are needed to do this procedure/technology safely?	There is provision of this in approximately 18 centres already so based on funding arrangements this can be made available in more centres

13	Is any specific training needed in order to use the procedure/technology with respect to efficacy or safety?	Yes, training for optimum placement of the spacer

Safety and efficacy of the procedure/technology

14	What are the potential harms of the procedure/technology? Please list any adverse events and potential risks (even if uncommon) and, if possible, estimate their incidence: Adverse events reported in the literature (if possible, please cite literature) Anecdotal adverse events (known from experience) Theoretical adverse events	Interventional procedure related risks. Misplacepent of the spacer. Adverse events as reported in the trial and also in the review article.
15	Please list the key efficacy outcomes for this procedure/technology?	As per trial data- reduction in rectal toxicity and bladder side-effects
16	Please list any uncertainties or concerns about the efficacy and safety of this procedure/?	Requires streamlining of services, experience in insertion and for radiotherapy departments to account for this in outlining and planning radiotherapy treatment.
17	Is there controversy, or important uncertainty, about any aspect of the procedure/technology?	There is the aspect of evaluating potential benefits and potential risks
18	If it is safe and efficacious, in your opinion, will this procedure be carried out in (please choose one):	Most or all district general hospitals. Though feasibility of setting up a hub and spoke model

Abstracts and ongoing studies

19	Please list any abstracts or conference proceedings that you are aware of that have been recently presented / published on this procedure/technology (this can include your own work). Please note that NICE will do a comprehensive literature search; we are only asking you for any very recent abstracts or conference proceedings which might not be found using standard literature searches. You do not need to supply a comprehensive reference list but it will help us if you list any that you think are particularly important.	The information I have should be available on NICE's literature review
20	Are there any major trials or registries of this procedure/technology currently in progress? If so, please list.	I am not aware of any such trials in UK currently

Other considerations

21	Approximately how many people each year would be eligible for an intervention with this procedure/technology, (give either as an estimated number, or a proportion of the target population)?	Potentially 80% cases having radical radiotherapy to prostate would be eligible based on funding.
22	Are there any issues with the usability or practical aspects of the procedure/technology?	It will require logistical arrangements and streamlining the treatment pathway
23	Are you aware of any issues which would prevent (or have prevented) this procedure/technology being adopted in your organisation or across the wider NHS?	The logistical arrangements and suitable training will be the key if funding approved

24	Is there any research that you feel would be needed to address uncertainties in the evidence base?	Would be useful to evaluate efficacy in ultrahypofractionated radiotherapy
25	Please suggest potential audit criteria for this procedure/technology. If known, please describe: − Beneficial outcome measures. These should include short- and long-term clinical outcomes, quality-of-life measures and patient-related outcomes. Please suggest the most appropriate method of measurement for each and the timescales over which these should be measured. − Adverse outcome measures. These should include early and late complications. Please state the post procedure timescales over which these should be measured:	Beneficial outcome measures: Rectal toxicity RTOG grading: Acute and Chronic Bladder toxicity RTOG grading Acute and Chronic Dosimetry constraints particularly rectal dose constraints as per planning protocols Adverse outcome measures: Procedure related side-effects

Further comments

26	Please add any further comments on your particular experiences or knowledge of the procedure/technology,	

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Declarations of interests

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Type of interest *	Description of interest	Relevant dates	
		Interest arose	Interest ceased
Direct - financial	Webinar and advisory meeting	**Oct 2020**	**Oct 2021**
Choose an item.			
Choose an item.			

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Print name:	**Amit Bahl**
Dated:	**26/10/2021**

NICE National Institute for Health and Care Excellence

Professional Expert Questionnaire

Technology/Procedure name & indication: IP1316/2 Biodegradable spacer insertion to reduce rectal toxicity during radiotherapy for prostate cancer

Your information

Name:	Charlotte Foley
Job title:	Consultant Urological Surgeon
Organisation:	East and North Herts NHS Trust
Email address:	
Professional organisation or society membership/affiliation:	British Association of Urological Surgeons
Nominated/ratified by (if applicable):	Click here to enter text.
Registration number (e.g. GMC, NMC, HCPC)	GMC - 4431974

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2	– Please indicate your research experience relating to this procedure	I have done bibliographic research on this procedure.

3	How innovative is this procedure/technology, compared to the current standard of care? Is it a minor variation or a novel approach/concept/design? Which of the following best describes the procedure (please choose one):	This is a new procedure applying the favourable properties of polyethylene glycol / Hyaluronic acid to the problem of rectal toxicity during prostate radiotherapy. Until these devices were available no particular interventions to protect the rectum were standard practice beyond careful radiotherapy planning. The first in a new class of procedure.
4	Does this procedure/technology have the potential to replace current standard care or would it be used as an addition to existing standard care?	This would be an addition to current standard care.

Current management

5	Please describe the current standard of care that is used in the NHS.	Best described by an Oncologist. For external beam, the patient's radiation protocol is devised after a planning scan (MRI or CT) a couple of weeks before starting treatment. A margin is allowed for prostate movement with breathing / bladder filling etc. Patients may have cytoreductive androgen deprivation therapy to reduce the size of the prostate and target for radiotherapy. The rectum is immediately adjacent and inevitably in the radiation field.
6	Are you aware of any other competing or alternative procedure/technology available to the NHS which have a similar function/mode of action to this? If so, how do these differ from the procedure/technology described in the briefing?	There are 2 devices on the market currently (SpaceOAR, Barrigel). I'm not aware of any others emerging. There is a biodegradeable rectal balloon in existence but using this would be less preferable to SpaceOAR / Barrigel anyway (more invasive) and I've only really come across it in the literature.

Potential patient benefits and impact on the health system

7	What do you consider to be the potential benefits to patients from using this procedure/technology?	Reduces the risk of radiation proctitis after prostate radiotherapy.
8	Are there any groups of patients who would particularly benefit from using this procedure/technology?	Those with colitis in whom radiotherapy is contraindicated. Larger prostates which therefore have a larger interface with the rectal wall.
9	Does this procedure/technology have the potential to change the current pathway or clinical outcomes to benefit the healthcare system? Could it lead, for example, to improved outcomes, fewer hospital visits or less invasive treatment?	Yes. It will reduce the morbidity of radiotherapy for a % of patients – perhaps 10%?? Radiation proctitis can be very unpleasant and difficult to treat – the EORTC has grading system from 1-4 early and late and even grade 1 late includes 5 x day BO. For the majority it wouldn't make an impact and be at least 1 extra visit, but it is a low risk procedure and patients are invested in it. They have almost all already had prostate biopsies, so are familiar with a similar procedure. For a minority it will improve their outcomes and avoid the ongoing investigation and management of proctitis.
10 - MTEP	Considering the care pathway as a whole, including initial capital and possible future costs avoided, is the procedure/technology likely to cost more or less than current standard care, or about the same? (in terms of staff, equipment, care setting etc)	This is an expensive intervention but which would be offset by avoiding treatment in some men. This question is best answered by a more in depth assessment of the incidence of proctitis vs the cost of treating it than there is space here. There must be some value attributed to the misery of frequent bloody diarrhoea / excessive mucus etc. I suspect it will cost more overall if all comers are treated and there are not many men who would not be suitable for it. It is hard to predict how radiosensitive a patient is, but the oncologists may be able to identify those at greater risk and reserve it for that subset of patients.
11 - MTEP	What do you consider to be the resource impact from adopting this procedure/technology (is it likely to cost more or less than standard care, or about same-in terms of staff, equipment, and care setting)?	Increased resources needed. This is entirely in addition to standard care. Each patient will need an extra procedure in a fully staffed operating theatre or clinical treatment room. It can be done under LA in co-operative patients but an anaesthetist would be required for some. The device is £1800-2000 +VAT currently. There are other cheaper consumables required too. A good quality US and 'stepper' is needed. The pathway becomes more complicated as an extra procedure must be fitted in before the planning scan and radiotherapy. In my trust this is done by a different department in a different hospital but that might not be the case elsewhere. This will impact on the 31/62 day pathway

		unless the patient is already on androgen deprivation.
12	What clinical facilities (or changes to existing facilities) are needed to do this procedure/technology safely?	In my trust we have it already. Other units might need an US / stepper. Access to theatres / treatment rooms is at a premium in my trust.
13	Is any specific training needed in order to use the procedure/technology with respect to efficacy or safety?	The inserter needs to be trained up in the procedure before being signed off by the training rep. It is 8-10 SpaceOAR cases and 3-5 Barrigel cases (though this was on the back of SpaceOAR training). The procedure is not hard for those that are already doing prostate biopsies. There is minimal training required for nursing staff.

Safety and efficacy of the procedure/technology

14	What are the potential harms of the procedure/technology? Please list any adverse events and potential risks (even if uncommon) and, if possible, estimate their incidence: Adverse events reported in the literature (if possible, please cite literature) Anecdotal adverse events (known from experience) Theoretical adverse events	Patients have to undergo an invasive procedure. They have to stop anticoagulation. There are minimal risks of bruising & discomfort. Rectal wall infiltration occurs if the spacer is put in the wrong place, but this does not seem to result in clinical harm – ?1% incidence . Barrigel can be dissolved using a hyaluronidase injected into it. There are case reports of fistulae, abscesses etc usually managed conservatively. I had a patient complain of rectal pain a few days after a spacer. Everything seemed in order, it settled and his treatment proceeded as planned. I ran it past the Boston Scientific Rep as it was not an event I'd heard of before, who escalated it, and I received an email with 23 questions on it (many of which I could not answer) and a deadline for response of 7 days. I asked the rep to contact me so I could run through the answers verbally but it never happened. The mechanism for reporting concerns therefore is burdensome to the busy clinician and I would think twice before reporting any subtle issues in the future.
15	Please list the key efficacy outcomes for this procedure/technology?	Prevention of radiation proctitis. Reduction in calculated rectal dosing when the radiotherapy field is planned.
16	Please list any uncertainties or concerns about the efficacy and safety of this procedure/?	One size (10ml) fits all although prostates can be very variable. With the SpaceOAR you have very little time to influence where the gel goes, and it is not visible on ultrasound until 2 weeks later. It is hard to know whether the 'lift' is optimal. Barrigel allows a lot more accuracy but therefore takes a little longer.

17	Is there controversy, or important uncertainty, about any aspect of the procedure/technology?	No
18	If it is safe and efficacious, in your opinion, will this procedure be carried out in (please choose one):	Most or all district general hospitals.

Abstracts and ongoing studies

19	Please list any abstracts or conference proceedings that you are aware of that have been recently presented / published on this procedure/technology (this can include your own work). Please note that NICE will do a comprehensive literature search; we are only asking you for any very recent abstracts or conference proceedings which might not be found using standard literature searches. You do not need to supply a comprehensive reference list but it will help us if you list any that you think are particularly important.	Nil
20	Are there any major trials or registries of this procedure/technology currently in progress? If so, please list.	Not to my knowledge

Other considerations

21	Approximately how many people each year would be eligible for an intervention with this procedure/technology, (give either as an estimated number, or a proportion of the target	In my Trusts population of 600,000 about 200 p.a.

	population)?	
22	Are there any issues with the usability or practical aspects of the procedure/technology?	It takes a little practice. Patients must lie very still.
23	Are you aware of any issues which would prevent (or have prevented) this procedure/technology being adopted in your organisation or across the wider NHS?	No.
24	Is there any research that you feel would be needed to address uncertainties in the evidence base?	5-20% of patients get radiation proctitis – it would be ideal to identify that 20% most at risk up front. Radiotherapy protocols are constantly evolving – are some protocols more risky than others to the rectum.
25	Please suggest potential audit criteria for this procedure/technology. If known, please describe: − Beneficial outcome measures. These should include short- and long-term clinical outcomes, quality-of-life measures and patient-related outcomes. Please suggest the most appropriate method of measurement for each and the timescales over which these should be measured. − Adverse outcome measures. These should include early and late complications. Please state the post procedure timescales over which these should be measured:	Beneficial outcome measures: Reduction in rectal dose achieved by spacer. Some evidence that erectile function is protected too Reduction in early and late radiation side effects – need for pads, times bowels opened per day, bleeding episodes, further treatment (sigmoidoscopy / lasering etc), pain scores, steroid use. Radiation can have far reaching side effects – but follow up to 5 years reasonable. Adverse outcome measures: See above.

Further comments

26	Please add any further comments on your particular experiences or knowledge of the procedure/technology,	I find the EORTC grading of proctitis rather focusses the mind. Studies often discuss only level 2-4 complications.

RTOG acute and RTOG/EORTC late radiation morbidity scoring for lower GI tract

	Grade 0	Grade 1	Grade 2	Grade 3	Grade 4
Acute	No changes	Increased frequency, change in bowel habits, or rectal discomfort not requiring medications or analgesics	Diarrhea requiring parasympatholytic drugs, mucous discharge not necessitating sanitary pads, abdominal or rectal pain requiring analgesics	Diarrhea requiring parenteral support, severe bloody or mucous discharge necessitating sanitary pads, abdominal distention	Acute or subacute obstruction, fistula or perforation, GI bleeding requiring transfusion, abdominal pain or tenesmus requiring tube decompression or diversion
Late	No changes	Mild diarrhea, mild cramping, bowel movement 5 times daily, slight rectal discharge or bleeding	Moderate diarrhea or colic, bowel movement > 5 times daily, excessive rectal mucus or intermittent bleeding	Obstruction or bleeding requiring surgery	Necrosis, perforation, or fistula

Abbreviations: EORTC, European Organization for Research and Treatment of Cancer; GI, gastrointestinal; RTOG, Radiation Therapy Oncology Group.

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Declarations of interests

Please state any potential conflicts of interest relevant to the procedure/technology (or competitor technologies) on which you are providing advice, or any involvements in disputes or complaints, in the previous **12 months** or likely to exist in the future. Please use the NICE policy on declaring and managing interests as a guide when declaring any interests. Further advice can be obtained from the NICE team.

Type of interest *	Description of interest	Relevant dates	
		Interest arose	Interest ceased
Choose an item.	NIL		
Choose an item.			
Choose an item.			

✓ ☐ I confirm that the information provided above is complete and correct. I acknowledge that any changes in these declarations during the course of my work with NICE, must be notified to NICE as soon as practicable and no later than 28 days after the interest arises. I am aware that if I do not make full, accurate and timely declarations then my advice may be excluded from being considered by the NICE committee.

Please note, all declarations of interest will be made publicly available on the NICE website.

Print name:	**Charlotte Foley**
Dated:	**28.9.21**

NICE National Institute for Health and Care Excellence

Professional Expert Questionnaire

Technology/Procedure name & indication: **IP1316/2 Biodegradable spacer insertion to reduce rectal toxicity during radiotherapy for prostate cancer**

Your information

Name:	Chris Parker
Job title:	Clinical oncologist
Organisation:	Royal Marsden Hospital
Email address:	
Professional organisation or society membership/affiliation:	Royal College of Radiologists
Nominated/ratified by (if applicable):	Click here to enter text.
Registration number (e.g. GMC, NMC, HCPC)	GMC 3338867

How NICE will use this information: the advice and views given in this questionnaire will form part of the information used by NICE and its advisory committees to develop guidance or a medtech innovation briefing on this procedure/technology. Information may be disclosed to third parties in accordance with the Freedom of Information Act 2000 and the Data Protection Act 2018, complying with data sharing guidance issued by the Information Commissioner's Office. Your advice and views represent your individual opinion and not that of your employer, professional society or a consensus view. Your name, job title, organisation and your responses, along with your declared interests will also be published online on the NICE website as part of the process of public consultation on the draft guidance, except in circumstances but not limited to, where comments are considered voluminous, or publication would be unlawful or inappropriate.

For more information about how we process your data please see our privacy notice.

☐ I give my consent for the information in this questionnaire to be used and may be published on the NICE website as outlined above. If consent is NOT given, please state reasons below:

Click here to enter text.

Please answer the following questions as fully as possible to provide further information about the procedure/technology and/or your experience.

Please note that questions 10 and 11 are applicable to the Medical Technologies Evaluation Programme (MTEP). We are requesting you to complete these sections as future guidance may also be produced under their work programme.

1	Please describe your level of experience with the procedure/technology, for example: Are you familiar with the procedure/technology?	I am familiar with the technology. I have published a review article and given two lectures on the subject
	Have you used it or are you currently using it?	No
	– Do you know how widely this procedure/technology is used in the NHS or what is the likely speed of uptake?	My understanding is that it is not currently widely available, and that the speed of uptake will depend on emerging data
	– Is this procedure/technology performed/used by clinicians in specialities other than your own?	Device may be inserted by urologists or radiologists, but always for purpose of preparation for radiotherapy
	– If your specialty is involved in patient selection or referral to another specialty for this	Device always used based on recommendation of a clinical oncologist

	procedure/technology, please indicate your experience with it.	
2	– Please indicate your research experience relating to this procedure (please choose one or more if relevant):	I have done bibliographic research on this procedure. I have published this research.(Considering benefit and risk before routinely recommending SpaceOAR. Hall WA, Tree AC, Dearnaley D, Parker CC, Prasad V, Roach M 3rd, Lawton CAF.Lancet Oncol. 2021 Jan;22(1):11-13.)
3	How innovative is this procedure/technology, compared to the current standard of care? Is it a minor variation or a novel approach/concept/design? Which of the following best describes the procedure (please choose one):	It is a novel concept Definitely novel and of uncertain safety and efficacy.
4	Does this procedure/technology have the potential to replace current standard care or would it be used as an addition to existing standard care?	Addition

Current management

5	Please describe the current standard of care that is used in the NHS.	Prostate radiotherapy is normally done without use of a rectal spacer
6	Are you aware of any other competing or alternative procedure/technology available to the NHS which have a similar function/mode of action to this? If so, how do these differ from the procedure/technology described in the briefing?	Not at present

Potential patient benefits and impact on the health system

7	What do you consider to be the potential benefits to patients from using this procedure/technology?	Reduction in risk of rectal morbidity after prostate radiotherapy
8	Are there any groups of patients who would particularly benefit from using this procedure/technology?	Patients at high risk of rectal morbidity after radiotherapy (eg inflammatory bowel disease)
9	Does this procedure/technology have the potential to change the current pathway or clinical outcomes to benefit the healthcare system? Could it lead, for example, to improved outcomes, fewer hospital visits or less invasive treatment?	Limited potential. Significant rectal morbidity is already unusual after prostate radiotherapy
10 - MTEP	Considering the care pathway as a whole, including initial capital and possible future costs avoided, is the procedure/technology likely to cost more or less than current standard care, or about the same? (in terms of staff, equipment, care setting etc)	More. In the US, it is estimated that the technology costs around $50m per year
11 - MTEP	What do you consider to be the resource impact from adopting this procedure/technology (is it likely to cost more or less than standard care, or about same-in terms of staff, equipment, and care setting)?	More. In the US, it is estimated that the technology costs around $50m per year
12	What clinical facilities (or changes to existing facilities) are needed to do this procedure/technology safely?	None to my knowledge

13	Is any specific training needed in order to use the procedure/technology with respect to efficacy or safety?	Yes. Severe complications (fistulas, abscesses) have been observed, and may be more common in the hands of new users

Safety and efficacy of the procedure/technology

14	What are the potential harms of the procedure/technology? Please list any adverse events and potential risks (even if uncommon) and, if possible, estimate their incidence: Adverse events reported in the literature (if possible, please cite literature) Anecdotal adverse events (known from experience) Theoretical adverse events	"Potential complications associated with SpaceOAR hydrogel include **but are not limited to** pain... or discomfort..., needle penetration of the bladder, prostate, rectal wall, rectum, or urethra; injection of SpaceOAR hydrogel into the bladder, prostate, rectal wall, rectum, or urethra; local inflammatory reactions; infection; injection of air, fluid or SpaceOAR hydrogel intravascularly; urinary retention; rectal mucosal damage, ulcers, necrosis; bleeding; constipation; and rectal urgency" Manufacturers website MAUDE database: ● 85 reported events related to SpaceOAR (2015-2020) ● 59/85 events grade 3+ ● Grade 4 events - 8 recto-urethral fistula - 7 colostomy - 5 pulmonary embolism - 2 anaphylactic shock Hall et al. Lancet Oncol 2021;22(1):11-13
15	Please list the key efficacy outcomes for this procedure/technology?	Rectal morbidity after prostate radiotherapy
16	Please list any uncertainties or concerns about the efficacy and safety of this procedure/?	● Only one, relatively small, randomised controlled trial ● Potential conflict of interests of trial authors ($800k)

		• Tightly defined inclusion criteria, so uncertain generalisability • Radiotherapy technique obsolete • Lack of physician blinding • Negative for primary endpoint (G1+ rectal toxicity at 6m) • Poor compliance with longer-term follow-up (40% dropout) • Only symptomatic benefit was exploratory, not pre-specified, endpoint • Fragility index of 1
17	Is there controversy, or important uncertainty, about any aspect of the procedure/technology?	The balance of benefits and harms is controversial
18	If it is safe and efficacious, in your opinion, will this procedure be carried out in (please choose one):	A minority of hospitals, but at least 10 in the UK.

Abstracts and ongoing studies

19	Please list any abstracts or conference proceedings that you are aware of that have been recently presented / published on this procedure/technology (this can include your own work). Please note that NICE will do a comprehensive literature search; we are only asking you for any very recent abstracts or conference proceedings which might not be found using standard literature searches. You do not need to supply a comprehensive reference list but it will help	I took part in a debate at ESTRO annual meeting 2021 on this subject. The speaker in favour of rectal spacers was Ben Vanneste. I was asked to speak against the routine use of rectal spacers

	us if you list any that you think are particularly important.	
20	Are there any major trials or registries of this procedure/technology currently in progress? If so, please list.	I understand that there are two ongoing randomised trials but I do not know the details

Other considerations

21	Approximately how many people each year would be eligible for an intervention with this procedure/technology, (give either as an estimated number, or a proportion of the target population)?	Up to 10,000 in the UK
22	Are there any issues with the usability or practical aspects of the procedure/technology?	
23	Are you aware of any issues which would prevent (or have prevented) this procedure/technology being adopted in your organisation or across the wider NHS?	Lack of good quality evidence of benefit
24	Is there any research that you feel would be needed to address uncertainties in the evidence base?	Need to understand the current level of rectal morbidity after prostate radiotherapy and whether it is possible to predict which patients will be affected. Given that less than 2% of men have significant rectal morbidity two years after radiotherapy, the large majority of patients do not stand to benefit from a rectal spacer
25	Please suggest potential audit criteria for this procedure/technology. If known, please describe: – Beneficial outcome measures. These should include short- and long-term clinical outcomes, quality-of-life measures and patient-related outcomes. Please suggest the most	I think audit of rectal spacers will be of limited value. I think the data from good quality randomised trials (currently lacking) will be more important

	appropriate method of measurement for each and the timescales over which these should be measured. – Adverse outcome measures. These should include early and late complications. Please state the post procedure timescales over which these should be measured:	

Further comments

26	Please add any further comments on your particular experiences or knowledge of the procedure/technology,	

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Declarations of interests

Please state any potential conflicts of interest relevant to the procedure/technology (or competitor technologies) on which you are providing advice, or any involvements in disputes or complaints, in the previous **12 months** or likely to exist in the future. Please use the NICE policy on declaring and managing interests as a guide when declaring any interests. Further advice can be obtained from the NICE team.

Type of interest *	Description of interest	Relevant dates	
		Interest arose	Interest ceased
Non-financial professional	I have twice taken part in debates on the use of rectal spacers. Each time, I was asked to speak against their routine use	**December 2020**	**August 2021**
Non-financial professional	I have co-authored a review article on rectal spacers	**January 2021**	**January 2021**
Choose an item.			

☐ I confirm that the information provided above is complete and correct. I acknowledge that any changes in these declarations during the course of my work with NICE, must be notified to NICE as soon as practicable and no later than 28 days after the interest arises. I am aware that if I do not make full, accurate and timely declarations then my advice may be excluded from being considered by the NICE committee.

Please note, all declarations of interest will be made publicly available on the NICE website.

Print name:	**CHRIS PARKER**
Dated:	**7/9/21**

Chris Parker, Clinical Oncologist, Royal Marsden Hospital

IPG590 Biodegradable spacer insertion to reduce rectal toxicity during radiotherapy for prostate cancer

1 Safety and efficacy of the procedure

1.1 What are the potential harms of the procedure?

Please list any adverse events and major risks (even if uncommon) and, if possible, estimate their incidence:

Adverse events reported in the literature (if possible please cite literature)

There has been a single randomised trial to test the safety of the rectal spacer. The initial report was by Mariados et al IJROBP (2015), and this was updated by Hamstra et al (2017)). Based on that trial, the manufacturer's website lists the adverse events as: pain... or discomfort..., needle penetration of the bladder, prostate, rectal wall, rectum, or urethra; injection of SpaceOAR hydrogel into the bladder, prostate, rectal wall, rectum, or urethra; local inflammatory reactions; infection; injection of air, fluid or SpaceOAR hydrogel intravascularly; urinary retention; rectal mucosal damage, ulcers, necrosis; bleeding; constipation; and rectal urgency.

Since then, there have been two publications that have reported severe complications of rectal spacer insertion:

***Major Complications and Adverse Events Related to the Injection of the SpaceOAR Hydrogel System Before Radiotherapy for Prostate Cancer: Review of the Manufacturer and User Facility Device Experience Database**. Aminsharifi A1,2, Kotamarti S3, Silver D3, Schulman A3. J Endourol. 2019 Oct;33(10):868-871*

Abstract

***Purpose:** SpaceOAR® is a Food and Drug Administration-approved hydrogel injection used to create space between the prostate and rectum during prostate radiotherapy. It has shown to significantly reduce the rectal radiation dose with lower rates of rectal toxicity. Despite a high safety performance in initial trials, SpaceOAR remains in early clinical use. Thus, we examined emerging safety reports as the system becomes more widely utilized. **Methods:** We reviewed the SpaceOAR manufacturer website for the safety profile and complications associated with the SpaceOAR hydrogel. We then compared this with reports submitted to the Manufacturer and User Facility Device Experience (MAUDE) database. **Results:** The manufacturer website reported risks including pain, needle penetration, and/or gel injection into a nearby organ or blood vessel, local inflammation, infection, urinary retention, and local rectal injury or symptoms. There were 22 unique reports discussing 25 patient cases in the MAUDE database from January 2015 to March 2019, with an increasing number of reports each year up through 2018. Unique major complications including acute pulmonary embolism, severe anaphylaxis, prostatic abscess and sepsis, purulent perineal drainage, rectal wall erosion, and rectourethral fistula were reported. **Conclusion:** Despite well-documented clinical benefits of the SpaceOAR*

System, there are a number of severe and debilitating complications recently reported in proximity to gel injection. This highlights the need for further study of device complications in light of its increasing clinical use.

Abscess formation following hydrogel spacer for prostate cancer radiotherapy: a rare complication. Hoe V, Yao HH1, Huang JG2, Guerrieri M3. BMJ Case Rep. 2019 Oct 5;12(10). pii: e229143. doi: 10.1136/bcr-2018-229143.

Abstract

Periprostatic abscess is a rare complication of hydrogel spacers in radiotherapy for prostate cancer. We present the case of a 61-year-old man who developed this condition. Abdominopelvis CT scan revealed a 54×35×75 mm collection in the location of the SpaceOAR, for which ultrasound-guided transperineal percutaneous drainage of the periprostatic abscess was performed. The patient remains well with serial CT scans showing near resolution of the collection.

Anecdotal adverse events (known from experience)

I am aware of two clinical anecdotes, both of which resulted in a colostomy to deal with complications of rectal spacer insertion.

Theoretical adverse events

There is a theoretical possibility that spacer insertion could cause displacement of extracapsular prostate cancer leading to reduced efficacy of radiotherapy.

1.2 Please list the key efficacy outcomes for this procedure?

The primary outcome measure for the single randomised controlled trial was the proportion of patients with Grade 1+ rectal adverse events within 6 months. The trial was negative for this endpoint, 34% for spacer vs 31% for control, p=0.7 (Mariados et al IJROBP (2015)).

The trial did report a benefit for the spacer in terms of Grade 2+ rectal adverse events (0% vs 6%), but this was either a secondary or an exploratory endpoint (not stated which in the paper).

1.3 Please list any uncertainties or concerns about the *efficacy* of this procedure?

See above. The trial was negative for the primary endpoint and the benefit in terms of Grade 2+ rectal adverse events has not been replicated.

The absolute risk of grade 2+ rectal adverse events for standard UK prostate radiotherapy is around 2% at 5 years (Dearnaley et al. Lancet Oncol 2016 17 1047-60), so there is little scope to improve this.

1.4 What clinician training is required to do this procedure safely?

I am not familiar with training required

1.5 What clinical facilities are needed to do this procedure safely?

I am not familiar with this aspect

1.6 Is there controversy, or important uncertainty, about any aspect of the way in which this procedure is currently being done or disseminated?

The press coverage of the rectal spacer has been extensive and positive, and has led to patient demand.

Among radiation oncologists specialising in prostate cancer, I believe that there is uncertainty about both the safety and the efficacy of the spacer.

4 Audit Criteria

Please suggest potential audit criteria for this procedure.

4.1 Beneficial outcome measures. This should include short and long term clinical outcomes, quality-of-life measures and patient related outcomes. Please suggest the most appropriate method of measurement for each and the timescales over which these should be measured:

The spacer is designed to reduce the risk of bowel adverse events after prostate radiotherapy. My own view is that any beneficial effects should be tested in a randomised controlled trial, not least because the incidence of bowel adverse events is low after prostate radiotherapy without use of the spacer. If such a trial were to be done, the same instruments as were used in the CHHIP trial would be suitable (Dearnaley et al. Lancet Oncol 2016 17 1047-60).

4.2 Adverse outcome measures. This should include early and late complications. Please state the post procedure timescales over which these should be measured.

Early complications:

- *Hospital admission rate within 60 days of spacer insertion*
- *Surgical intervention within 60 days of spacer insertion*

Late complications

- Biochemical failure after prostate radiotherapy. The theoretical possibility of increased cancer recurrence could only be tested in a relatively large randomised trial with at least 5 years of follow-up

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Professional Expert Questionnaire

Technology/Procedure name & indication: **IP1316/2 Biodegradable spacer insertion to reduce rectal toxicity during radiotherapy for prostate cancer**

Your information

Name:	Chris Blick
Job title:	Consultant Urologist
Organisation:	Royal Berkshire Hospital
Email address:	
Professional organisation or society membership/affiliation:	GMC
Nominated/ratified by (if applicable):	Click here to enter text.
Registration number (e.g. GMC, NMC, HCPC)	6056963

How NICE will use this information: the advice and views given in this questionnaire will form part of the information used by NICE and its advisory committees to develop guidance or a medtech innovation briefing on this procedure/technology. Information may be disclosed to third parties in accordance with the Freedom of Information Act 2000 and the Data Protection Act 2018, complying with data sharing guidance issued by the Information Commissioner's Office. Your advice and views represent your individual opinion and not that of your employer, professional society or a consensus view. Your name, job title, organisation and your responses, along with your declared interests will also be published online on the NICE website as part of the process of public consultation on the draft guidance, except in circumstances but not limited to, where comments are considered voluminous, or publication would be unlawful or inappropriate.

For more information about how we process your data please see our privacy notice.

Y I give my consent for the information in this questionnaire to be used and may be published on the NICE website as outlined above. If consent is NOT given, please state reasons below:

Click here to enter text.

Please answer the following questions as fully as possible to provide further information about the procedure/technology and/or your experience.

Please note that questions 10 and 11 are applicable to the Medical Technologies Evaluation Programme (MTEP). We are requesting you to complete these sections as future guidance may also be produced under their work programme.

1	Please describe your level of experience with the procedure/technology, for example: Are you familiar with the procedure/technology?	I have been trained and have experience in the insertion of balloon rectal spacers and gels. I am therefore familiar with three different techniques in use in this field.
	Have you used it or are you currently using it?	
	– Do you know how widely this procedure/technology is used in the NHS or what is the likely speed of uptake?	I am aware of regional uptake and useage, however I have no data at present regarding national use.
	– Is this procedure/technology performed/used by clinicians in specialities other than your own?	This procedure is mainly used by urologists but I gather some oncologists are also involved
	– If your specialty is involved in patient selection or referral to another specialty for this	Patient selection is determined by oncologists and urologists, in my experience it depends on indication. For EBRT and Proton therapy patients are determined by oncologists, in the case of brachytherapy it may be either a urologist or oncologist

	procedure/technology, please indicate your experience with it.	
2	– Please indicate your research experience relating to this procedure (please choose one or more if relevant):	I have done bibliographic research on this procedure. .
3	How innovative is this procedure/technology, compared to the current standard of care? Is it a minor variation or a novel approach/concept/design? Which of the following best describes the procedure (please choose one):	. . The first in a new class of procedure.
4	Does this procedure/technology have the potential to replace current standard care or would it be used as an addition to existing standard care?	May replace standard of care

Current management

5	Please describe the current standard of care that is used in the NHS.	Rectal spacers are not routinely offered outside ITP
6	Are you aware of any other competing or alternative procedure/technology available to the NHS which have a similar function/mode of action to this? If so, how do these differ from the procedure/technology described in the briefing?	Only options are a variation on the same theme so balloon spacers versus gel versus SpaceoAR

Potential patient benefits and impact on the health system

7	What do you consider to be the potential benefits to patients from using this procedure/technology?	Reducing toxicity/ bowel complications from radiotherapy
8	Are there any groups of patients who would particularly benefit from using this procedure/technology?	Prostate cancer patients before EBRT or brachytherapy
9	Does this procedure/technology have the potential to change the current pathway or clinical outcomes to benefit the healthcare system? Could it lead, for example, to improved outcomes, fewer hospital visits or less invasive treatment?	Yes, reducing side effects of treatment, hence short and long term complications related to radiotherapy. This can reduce hospital visits, QOL and need for further treatment related to side effects
10 - MTEP	Considering the care pathway as a whole, including initial capital and possible future costs avoided, is the procedure/technology likely to cost more or less than current standard care, or about the same? (in terms of staff, equipment, care setting etc)	It will cost more
11 - MTEP	What do you consider to be the resource impact from adopting this procedure/technology (is it likely to cost more or less than standard care, or about same-in terms of staff, equipment, and care setting)?	It will require an additional procedure, the cost of the procedure may be balanced with a reduction in complications related to radiotherapy although these are more difficult to realise in the short and long term
12	What clinical facilities (or changes to existing facilities) are needed to do this procedure/technology safely?	Certain procedures can be performed in outpatients using existing minor ops/ prostate biopsy suite, balloon procedures are usually performed under anaesthetic in an operating theatre

13	Is any specific training needed in order to use the procedure/technology with respect to efficacy or safety?	Each individual carrying out and those assisting with the procedure will require training

Safety and efficacy of the procedure/technology

14	What are the potential harms of the procedure/technology? Please list any adverse events and potential risks (even if uncommon) and, if possible, estimate their incidence: Adverse events reported in the literature (if possible, please cite literature) Anecdotal adverse events (known from experience) Theoretical adverse events	Infection, bleeding, incorrect placement and rectal injury <2% Schörghofer A, Drerup M, Kunit T, Lusuardi L, Holzinger J, Karner J, Groher M, Zoubek C, Forstner R, Sedlmayer F, Wolf F. Rectum-spacer related acute toxicity - endoscopy results of 403 prostate cancer patients after implantation of gel or balloon spacers. Radiat Oncol. 2019 Mar 15;14(1):47. doi: 10.1186/s13014-019-1248-6. PMID: 30876433; PMCID: PMC6419822.
15	Please list the key efficacy outcomes for this procedure/technology?	Complications from insertion, effects on rectal wall dosing after implant, bowel complications from RT
16	Please list any uncertainties or concerns about the efficacy and safety of this procedure/?	None
17	Is there controversy, or important uncertainty, about any aspect of the procedure/technology?	No
18	If it is safe and efficacious, in your opinion, will this procedure be carried out in (please choose one):	A minority of hospitals, but at least 10 in the UK. .

Abstracts and ongoing studies

19	Please list any abstracts or conference proceedings that you are aware of that have been recently presented / published on this procedure/technology (this can include your own work). Please note that NICE will do a comprehensive literature search; we are only asking you for any very recent abstracts or conference proceedings which might not be found using standard literature searches. You do not need to supply a comprehensive reference list but it will help us if you list any that you think are particularly important.	
20	Are there any major trials or registries of this procedure/technology currently in progress? If so, please list.	I am not aware

Other considerations

21	Approximately how many people each year would be eligible for an intervention with this procedure/technology, (give either as an estimated number, or a proportion of the target population)?	>50% of target population
22	Are there any issues with the usability or practical aspects of the procedure/technology?	No
23	Are you aware of any issues which would prevent (or have prevented) this	No

	procedure/technology being adopted in your organisation or across the wider NHS?	
24	Is there any research that you feel would be needed to address uncertainties in the evidence base?	Comparison of techniques gel vs balloon
25	Please suggest potential audit criteria for this procedure/technology. If known, please describe: − Beneficial outcome measures. These should include short- and long-term clinical outcomes, quality-of-life measures and patient-related outcomes. Please suggest the most appropriate method of measurement for each and the timescales over which these should be measured. − Adverse outcome measures. These should include early and late complications. Please state the post procedure timescales over which these should be measured:	Beneficial outcome measures: QOL Rectal complications from RT Short and long term Adverse outcome measures: Complications from insertion Pain, Rectal Injury etc

Further comments

26	Please add any further comments on your particular experiences or knowledge of the procedure/technology,	In my experience the process is more appropriate if performed under local anaesthetic to reduce the burden on NHS resources.

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Declarations of interests

Please state any potential conflicts of interest relevant to the procedure/technology (or competitor technologies) on which you are providing advice, or any involvements in disputes or complaints, in the previous **12 months** or likely to exist in the future. Please use the NICE policy on declaring and managing interests as a guide when declaring any interests. Further advice can be obtained from the NICE team.

Type of interest *	Description of interest	Relevant dates	
		Interest arose	Interest ceased
Choose an item.	None		
Choose an item.			
Choose an item.			

y I confirm that the information provided above is complete and correct. I acknowledge that any changes in these declarations during the course of my work with NICE, must be notified to NICE as soon as practicable and no later than 28 days after the interest arises. I am aware that if I do not make full, accurate and timely declarations then my advice may be excluded from being considered by the NICE committee.

Please note, all declarations of interest will be made publicly available on the NICE website.

Print name:	**Chris Blick**
Dated:	**12/10/2021**

NICE National Institute for Health and Care Excellence

Professional Expert Questionnaire

Technology/Procedure name & indication: **IP1316/2 Biodegradable spacer insertion to reduce rectal toxicity during radiotherapy for prostate cancer**

Your information

Name:	Darren Leaning
Job title:	Consultant Clinical Oncologist
Organisation:	James Cook Cancer Institute, Middlesbrough
Email address:	
Professional organisation or society membership/affiliation:	FRCR, MRCP
Nominated/ratified by (if applicable):	NICE
Registration number (e.g. GMC, NMC, HCPC)	6145546

How NICE will use this information: the advice and views given in this questionnaire will form part of the information used by NICE and its advisory committees to develop guidance or a medtech innovation briefing on this procedure/technology. Information may be disclosed to third parties in accordance with the Freedom of Information Act 2000 and the Data Protection Act 2018, complying with data sharing guidance issued by the Information Commissioner's Office. Your advice and views represent your individual opinion and not that of your employer, professional society or a consensus view. Your name, job title, organisation and your responses, along with your declared interests will also be published online on the NICE website as part of the process of public consultation on the draft guidance, except in circumstances but not limited to, where comments are considered voluminous, or publication would be unlawful or inappropriate.

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☒ I give my consent for the information in this questionnaire to be used and may be published on the NICE website as outlined above. If consent is NOT given, please state reasons below:

Click here to enter text.

Please answer the following questions as fully as possible to provide further information about the procedure/technology and/or your experience.

Please note that questions 10 and 11 are applicable to the Medical Technologies Evaluation Programme (MTEP). We are requesting you to complete these sections as future guidance may also be produced under their work programme.

1	Please describe your level of experience with the procedure/technology, for example: Are you familiar with the procedure/technology? Have you used it or are you currently using it? – Do you know how widely this procedure/technology is used in the NHS or what is the likely speed of uptake? – Is this procedure/technology performed/used by clinicians in specialities other than your own? – If your specialty is involved in patient selection or referral to another specialty for this	Our organisation has inserted over 100 SpaceOAR devices since June 2019. We recommend its use in patients with T1-2 (some T3a disease, if no posterior extracapsular extension expected based on DRE and MRI appearances) patients, in which we are offering radical dose radiotherapy. We have one interventional radiology consultant – Dr KP Lim inserting the SpaceOAR device. We are also the first organisation in the world to have trained nurse specialists to insert. Currently these are Helen Scullion and Joe Robinson (who is an advanced interventional ultrasonographist). The interventional radiology team in our hospital perform all the TRUS/TP prostate biopsies so it seemed appropriate for them to carry out SpaceOAR insertions as they have the most clinical experience. To date, we have had no major complications. As oncologists, we select suitable patients and carry out taking overarching responsibility for their care and subsequent management.

	procedure/technology, please indicate your experience with it.	
2	– Please indicate your research experience relating to this procedure (please choose one or more if relevant):	I have done bibliographic research on this procedure. I have done research on this procedure in laboratory settings (e.g. device-related research). I have done clinical research on this procedure involving patients or healthy volunteers. I have published this research. I have had no involvement in research on this procedure. Other (please comment) we are currently reviewing/auditing our practice. We are also going to be contributing to a multi-centre comparative dosimetric study with Velindre, Newcastle, Belfast.Study in the final design status at present
3	How innovative is this procedure/technology, compared to the current standard of care? Is it a minor variation or a novel approach/concept/design? Which of the following best describes the procedure (please choose one):	In my mind, it is a minor variation. The device can be inserted (in most trusts) at the same time prostate fiducial markers are inserted. It would not take up significant time if performed under LA and carried out in a similar fashion to our own service. I come to the below conclusion based on our own experience and the MAUDE database. If the procedure is performed by competent practitioners performing similar types of interventional procedure, I see no significant risk or additional steps for the patients. Established practice and no longer new. A minor variation on an existing procedure, which is unlikely to alter the procedure's safety and efficacy. Definitely novel and of uncertain safety and efficacy. The first in a new class of procedure.

4	Does this procedure/technology have the potential to replace current standard care or would it be used as an addition to existing standard care?	An addition to SOC

Current management

5	Please describe the current standard of care that is used in the NHS.	No rectal spacing device. VMAT/IMRT based radiotherapy, using rectal protocols as part of the planning process to minimise rectal distension and keeping rectal doses within defined constraints, which could occasionally lead to compromising PTV coverage.
6	Are you aware of any other competing or alternative procedure/technology available to the NHS which have a similar function/mode of action to this? If so, how do these differ from the procedure/technology described in the briefing?	Barrigel – this does not immediately solidify. It can be moulded into position. I have no experience with this. The evidence is not as conclusive at present. Rectal balloons (require surgical placement) – no experience.

Potential patient benefits and impact on the health system

7	What do you consider to be the potential benefits to patients from using this procedure/technology?	Minimising late rectal complications, including rectal bleeding, flatulence, incontinence. Potentially reducing the rate of radiotherapy induced secondary malignancies Enabling safer radiotherapy retreatments (in patients whom there is local recurrence if disease in the future) Dose escalation – for high grade disease.
8	Are there any groups of patients who would particularly benefit from using this procedure/technology?	In my view, all who are eligible potentially will. Specific groups of patients could include those with: inflammatory bowel disease, recurrent disease, patients whom we would want to offer a brachytherapy or simultaneous integrated boost to.
9	Does this procedure/technology have the potential to change the current pathway or clinical outcomes to benefit the healthcare system? Could it lead, for example, to improved outcomes, fewer hospital visits or less invasive treatment?	It will help reduce patients presenting with “bothersome” bowel symptoms (this includes grade 1 rectal toxicity). Less GP appointments, less requests for endoscopic examination. Less emergency department presentations.
10 - MTEP	Considering the care pathway as a whole, including initial capital and possible future costs avoided, is the procedure/technology likely to cost more or less than current standard care, or about the same? (in terms of staff, equipment, care setting etc)	Th only real additional cost for cancer centres performing prostate biopsies and inserting prostate fiducials is the cost of the gel. There will be savings downstream because of the reduced rectal complications. Hopefully if the gel price can be competitively brought down, my feelings are it will be cost neutral.
11 - MTEP	What do you consider to be the resource impact from adopting this procedure/technology (is it likely to cost more or less than standard care, or about same-in terms of staff, equipment, and care setting)?	Minimal training (provided free by the company) for competent transrectal ultrasound and prostate biopsy practitioners.

12	What clinical facilities (or changes to existing facilities) are needed to do this procedure/technology safely?	Dedicated slot in a department. Procedure takes 20 mins when competent.
13	Is any specific training needed in order to use the procedure/technology with respect to efficacy or safety?	Provided by company. Need to be competent in transrectal ultrasound and transperineal procedures.

Safety and efficacy of the procedure/technology

14	What are the potential harms of the procedure/technology? Please list any adverse events and potential risks (even if uncommon) and, if possible, estimate their incidence: Adverse events reported in the literature (if possible, please cite literature) Anecdotal adverse events (known from experience) Theoretical adverse events	Infection (1%), abscess (<1%), rectal wall infiltration (3%), constipation (10%), intraprostatic infiltration of gel (<1%), urinary retention (<1%), gel not solidifying (I have seen this once) Please refer to the MAUDE database for upto date reporting of events. It is worth noting that to date, we have had 1 patient with infection related complication, treated with a course of oral antibiotics. No other deleterious events have occurred.
15	Please list the key efficacy outcomes for this procedure/technology?	To reduce rectal toxicity, improve prostate positioning (evidence to support reduced intra-fraction prostate movement)
16	Please list any uncertainties or concerns about the efficacy and safety of this procedure/?	Definite reduction in late rectal events based upon a UK population and based upon moderately hypofractionated treatments e.g 60Gy in 20 fractions or SABR.
17	Is there controversy, or important uncertainty, about any aspect of the procedure/technology?	Yes. Certain cancer centres are fearful of these devices based upon anecdotal events.

18	If it is safe and efficacious, in your opinion, will this procedure be carried out in (please choose one):	Most or all district general hospitals. A minority of hospitals, but at least 10 in the UK. Ideally at cancer centres only. We predict 150-200 patients per annum would be eligible based upon a cancer centre serving a population of 1.1million. Fewer than 10 specialist centres in the UK. Cannot predict at present.

Abstracts and ongoing studies

19	Please list any abstracts or conference proceedings that you are aware of that have been recently presented / published on this procedure/technology (this can include your own work). Please note that NICE will do a comprehensive literature search; we are only asking you for any very recent abstracts or conference proceedings which might not be found using standard literature searches. You do not need to supply a comprehensive reference list but it will help us if you list any that you think are particularly important.	
20	Are there any major trials or registries of this procedure/technology currently in progress? If so, please list.	MAUDE database for harmful events NHS ITP **In submission: Assessing the Impact of Hydrogel Spacers on Organ at Risk Dosimetry for Standard UK Trial Protocols using Automated Planning.** Applicants: Prof J Staffurth and Mr P Wheeler; Velindre University NHS Trust

Other considerations

21	Approximately how many people each year would be eligible for an intervention with this procedure/technology, (give either as an estimated number, or a proportion of the target population)?	200 per 1 million population
22	Are there any issues with the usability or practical aspects of the procedure/technology?	As mentioned above
23	Are you aware of any issues which would prevent (or have prevented) this procedure/technology being adopted in your organisation or across the wider NHS?	Doubters.
24	Is there any research that you feel would be needed to address uncertainties in the evidence base?	There is to be an international prospective study comparing SABR to prostate +/- rectal SpaceOAR Vue. This is called SABRE. This would be extremely valuable and should be fully supported. It will hopefully help demonstrate the true benefit in reducing rectal toxicity using up-to-date radiotherapy fractionations and total dose with modern treatment delivery.
25	Please suggest potential audit criteria for this procedure/technology. If known, please describe: − Beneficial outcome measures. These should include short- and long-term clinical outcomes, quality-of-life measures and patient-related outcomes. Please suggest the most appropriate method of measurement for each and the timescales over which these should be measured.	Beneficial outcome measures: Improved quality of life, reduced hospital appointments for treatment related complications Adverse outcome measures:

	– Adverse outcome measures. These should include early and late complications. Please state the post procedure timescales over which these should be measured:	

Further comments

26	Please add any further comments on your particular experiences or knowledge of the procedure/technology,	

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Declarations of interests

Please state any potential conflicts of interest relevant to the procedure/technology (or competitor technologies) on which you are providing advice, or any involvements in disputes or complaints, in the previous **12 months** or likely to exist in the future. Please use the NICE policy on declaring and managing interests as a guide when declaring any interests. Further advice can be obtained from the NICE team.

Type of interest *	Description of interest	Relevant dates	
		Interest arose	Interest ceased
Direct - financial	I have given talks promoting SpaceOAR on behalf of Boston Scientific	**June 2019**	**Present**
Choose an item.			
Choose an item.			

☒ I confirm that the information provided above is complete and correct. I acknowledge that any changes in these declarations during the course of my work with NICE, must be notified to NICE as soon as practicable and no later than 28 days after the interest arises. I am aware that if I do not make full, accurate and timely declarations then my advice may be excluded from being considered by the NICE committee.

Please note, all declarations of interest will be made publicly available on the NICE website.

Print name:	**Dr Darren Leaning**
Dated:	**01/09/2021**

NICE National Institute for Health and Care Excellence

Professional Expert Questionnaire

Technology/Procedure name & indication: **IP1316/2 Biodegradable spacer insertion to reduce rectal toxicity during radiotherapy for prostate cancer**

Your information

Name:	John Frew
Job title:	Clinical oncologist
Organisation:	Newcastle upon Tyne hospital NHS trust
Email address:	
Professional organisation or society membership/affiliation:	RCR
Nominated/ratified by (if applicable):	Click here to enter text.
Registration number (e.g. GMC, NMC, HCPC)	4552453

How NICE will use this information: the advice and views given in this questionnaire will form part of the information used by NICE and its advisory committees to develop guidance or a medtech innovation briefing on this procedure/technology. Information may be disclosed to third parties in accordance with the Freedom of Information Act 2000 and the Data Protection Act 2018, complying with data sharing guidance issued by the Information Commissioner's Office. Your advice and views represent your individual opinion and not that of your employer, professional society or a consensus view. Your name, job title, organisation and your responses, along with your declared interests will also be published online on the NICE website as part of the process of public consultation on the draft guidance, except in circumstances but not limited to, where comments are considered voluminous, or publication would be unlawful or inappropriate.

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yes ☐ I give my consent for the information in this questionnaire to be used and may be published on the NICE website as outlined above. If consent is NOT given, please state reasons below:

Click here to enter text.

Please answer the following questions as fully as possible to provide further information about the procedure/technology and/or your experience.

Please note that questions 10 and 11 are applicable to the Medical Technologies Evaluation Programme (MTEP). We are requesting you to complete these sections as future guidance may also be produced under their work programme.

1	Please describe your level of experience with the procedure/technology, for example: Are you familiar with the procedure/technology?	I have helped set up the service in Newcastle. We have implanted around 30 SPACE OAR implants – will confirm and use them for patients undergoing SABR Yes
	Have you used it or are you currently using it? – Do you know how widely this procedure/technology is used in the NHS or what is the likely speed of uptake?	No detailed knowledge
	– Is this procedure/technology performed/used by clinicians in specialities other than your own?	Performed by radiologist or urologists most commonly
	– If your specialty is involved in patient selection or referral to another specialty for this	yes

	procedure/technology, please indicate your experience with it.	
2	– Please indicate your research experience relating to this procedure (please choose one or more if relevant):	I have done bibliographic research on this procedure. I have done research on this procedure in laboratory settings (e.g. device-related research). I have done clinical research on this procedure involving patients or healthy volunteers. I have published this research. I have had no involvement in research on this procedure.X Other (please comment) - One of a group of centres contributing data for research
3	How innovative is this procedure/technology, compared to the current standard of care? Is it a minor variation or a novel approach/concept/design? Which of the following best describes the procedure (please choose one):	Novel approach/ /concept **Established practice and no longer new. (difficult to choose 1)** A minor variation on an existing procedure, which is unlikely to alter the procedure's safety and efficacy. Definitely novel and of uncertain safety and efficacy. The first in a new class of procedure.
4	Does this procedure/technology have the potential to replace current standard care or would it be used as an addition to existing standard care?	In addition

Current management

5	Please describe the current standard of care that is used in the NHS.	Prostate radiotherapy with no Hydrogel implant
6	Are you aware of any other competing or alternative procedure/technology available to the NHS which have a similar function/mode of action to this? If so, how do these differ from the procedure/technology described in the briefing?	More than 1 manufacturer of a similar product

Potential patient benefits and impact on the health system

7	What do you consider to be the potential benefits to patients from using this procedure/technology?	Reduced toxicity of treatment / increase treatment efficacy with dose escalation
8	Are there any groups of patients who would particularly benefit from using this procedure/technology?	Patients with bowel problems Patients receiving increase dose radiotherapy to tumours near rectum
9	Does this procedure/technology have the potential to change the current pathway or clinical outcomes to benefit the healthcare system? Could it lead, for example, to improved outcomes, fewer hospital visits or less invasive treatment?	hi I am not expert to answer this question
10 - MTEP	Considering the care pathway as a whole, including initial capital and possible future costs avoided, is the procedure/technology likely to cost more or less than current standard care, or about the same? (in terms of staff, equipment, care setting etc)	Don't know
11 - MTEP	What do you consider to be the resource impact from adopting this procedure/technology (is it likely to cost more or less than standard care, or about same-in terms of staff, equipment, and care setting)?	Increase initial costs with the potential for reducing costs in the long-term by reducing treatment related toxicity or increasing the chance of cancer control
12	What clinical facilities (or changes to existing facilities) are needed to do this procedure/technology safely?	Commissioning through evaluation?

13	Is any specific training needed in order to use the procedure/technology with respect to efficacy or safety?	Operator training to safely implant Hydrogel Radiotherapy team training – target volume outlining and image guided radiotherapy

Safety and efficacy of the procedure/technology

14	What are the potential harms of the procedure/technology? Please list any adverse events and potential risks (even if uncommon) and, if possible, estimate their incidence: Adverse events reported in the literature (if possible, please cite literature) Anecdotal adverse events (known from experience) Theoretical adverse events	As per registration trial data
15	Please list the key efficacy outcomes for this procedure/technology?	Reduced long-term bowel and urinary toxicity
16	Please list any uncertainties or concerns about the efficacy and safety of this procedure/?	Rectal wall injury
17	Is there controversy, or important uncertainty, about any aspect of the procedure/technology?	
18	If it is safe and efficacious, in your opinion, will this procedure be carried out in (please choose one):	Most or all district general hospitals. Majority of cancer centres / centres with urology MDT A minority of hospitals, but at least 10 in the UK. Fewer than 10 specialist centres in the UK.

		Cannot predict at present.

Abstracts and ongoing studies

19	Please list any abstracts or conference proceedings that you are aware of that have been recently presented / published on this procedure/technology (this can include your own work). Please note that NICE will do a comprehensive literature search; we are only asking you for any very recent abstracts or conference proceedings which might not be found using standard literature searches. You do not need to supply a comprehensive reference list but it will help us if you list any that you think are particularly important.	
20	Are there any major trials or registries of this procedure/technology currently in progress? If so, please list.	Not known

Other considerations

21	Approximately how many people each year would be eligible for an intervention with this procedure/technology, (give either as an estimated number, or a proportion of the target population)?	Potentially around 50% of patients receiving prostate radical radiotherapy
22	Are there any issues with the usability or practical aspects of the procedure/technology?	

23	Are you aware of any issues which would prevent (or have prevented) this procedure/technology being adopted in your organisation or across the wider NHS?	Huge implications for patient pathway and would need significant additional resource to support widespread introduction
24	Is there any research that you feel would be needed to address uncertainties in the evidence base?	
25	Please suggest potential audit criteria for this procedure/technology. If known, please describe: − Beneficial outcome measures. These should include short- and long-term clinical outcomes, quality-of-life measures and patient-related outcomes. Please suggest the most appropriate method of measurement for each and the timescales over which these should be measured. − Adverse outcome measures. These should include early and late complications. Please state the post procedure timescales over which these should be measured:	Beneficial outcome measures: Adverse outcome measures:

Further comments

26	Please add any further comments on your particular experiences or knowledge of the procedure/technology,	

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Declarations of interests

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Type of interest *	Description of interest	Relevant dates	
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Choose an item.			
Choose an item.			
Choose an item.			

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Please note, all declarations of interest will be made publicly available on the NICE website.

Print name:	**John Frew**
Dated:	**06.09.2021**

NICE National Institute for Health and Care Excellence

Professional Expert Questionnaire

Technology/Procedure name & indication: **IP1316/2 Biodegradable spacer insertion to reduce rectal toxicity during radiotherapy for prostate cancer**

Your information

Name:	Philip Charlesworth
Job title:	Consultant Urological Surgeon
Organisation:	Royal Berkshire Hospital
Email address:	
Professional organisation or society membership/affiliation:	Fellow of the Royal College of Surgeons of England, FRCS(Urol)
Nominated/ratified by (if applicable):	Click here to enter text.
Registration number (e.g. GMC, NMC, HCPC)	GMC no. 4717308

How NICE will use this information: the advice and views given in this questionnaire will form part of the information used by NICE and its advisory committees to develop guidance or a medtech innovation briefing on this procedure/technology. Information may be disclosed to third parties in accordance with the Freedom of Information Act 2000 and the Data Protection Act 2018, complying with data sharing guidance issued by the Information Commissioner's Office. Your advice and views represent your individual opinion and not that of your employer, professional society or a consensus view. Your name, job title, organisation and your responses, along with your declared interests will also be published online on the NICE website as part of the process of public consultation on the draft guidance, except in circumstances but not limited to, where comments are considered voluminous, or publication would be unlawful or inappropriate.

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Click here to enter text.

Please answer the following questions as fully as possible to provide further information about the procedure/technology and/or your experience.

Please note that questions 10 and 11 are applicable to the Medical Technologies Evaluation Programme (MTEP). We are requesting you to complete these sections as future guidance may also be produced under their work programme.

1	Please describe your level of experience with the procedure/technology, for example: Are you familiar with the procedure/technology? Have you used it or are you currently using it? – Do you know how widely this procedure/technology is used in the NHS or what is the likely speed of uptake? – Is this procedure/technology performed/used by clinicians in specialities other than your own? – If your specialty is involved in patient selection or referral to another specialty for this	I have a high level of clinical experience inserting both of the injectable products under GA & LA since April 2018. I have a clinical leadership role overseeing all insertions performed in Berkshire for the NHS, and specifically at the Royal Berkshire Hospital since 2018. I have also have an overview of the 673 insertions across the UK performed by GenesisCare UK, across multiple sites. I have been involved in auditing these insertions and looking at quality assurance measures for insertions under GA & LA. (GenesisCare is the largest provider of cancer services ouside of the NHS, in the UK) Yes, I am aware of the NHS ITP programme for SpaceOAR, and have been involved in this in Berkshire. Yes, there are some oncologists across the UK that do the insertions. Most are done by urologists though. Patient selection is always from oncologist

	procedure/technology, please indicate your experience with it.	
2	– Please indicate your research experience relating to this procedure (please choose one or more if relevant):	I have done bibliographic research on this procedure. - Yes I have done research on this procedure in laboratory settings (e.g. device-related research). - No I have done clinical research on this procedure involving patients or healthy volunteers. - No I have published this research. - No I have had no involvement in research on this procedure. - No Other (please comment) – I have quite a lot of experience in clinical audit
3	How innovative is this procedure/technology, compared to the current standard of care? Is it a minor variation or a novel approach/concept/design? Which of the following best describes the procedure (please choose one):	Novel Established practice and no longer new. – Varies by oncologist and provider. Standard of Care for many oncologists now. Standard of care with GenesisCare. Standard of care in USA. Standrad of care in Australia. A minor variation on an existing procedure, which is unlikely to alter the procedure's safety and efficacy. Definitely novel and of uncertain safety and efficacy. – novel but safe The first in a new class of procedure.
4	Does this procedure/technology have the potential to replace current standard care or	Yes

	would it be used as an addition to existing standard care?	

Current management

5	Please describe the current standard of care that is used in the NHS.	No rectal spacing for patients having external beam radiotherapy for prostate cancer. The complications of this can be radiation proctitis.
6	Are you aware of any other competing or alternative procedure/technology available to the NHS which have a similar function/mode of action to this? If so, how do these differ from the procedure/technology described in the briefing?	There is one insertable balloon. There are 2 x alternative products for injectable gels

Potential patient benefits and impact on the health system

7	What do you consider to be the potential benefits to patients from using this procedure/technology?	RCTs show significant reduction in radiation proctitis. Also shows reduction in bladder and other bowel toxicity
8	Are there any groups of patients who would particularly benefit from using this procedure/technology?	Yes, patients with bowel symptoms, particularly with inflammatory bowel disease (who would otherwise be contraindicated for radiotherapy)
9	Does this procedure/technology have the potential to change the current pathway or clinical outcomes to benefit the healthcare system? Could it lead, for example, to improved outcomes, fewer hospital visits or less invasive treatment?	Yes. Decrease in the management of radiation proctitis
10 - MTEP	Considering the care pathway as a whole, including initial capital and possible future costs avoided, is the procedure/technology likely to cost more or less than current standard care, or about the same? (in terms of staff, equipment, care setting etc)	More initial. Less if whole pathway taken into account
11 - MTEP	What do you consider to be the resource impact from adopting this procedure/technology (is it likely to cost more or less than standard care, or about same-in terms of staff, equipment, and care setting)?	As above
12	What clinical facilities (or changes to existing facilities) are needed to do this procedure/technology safely?	Infrastructure costs already in place in urology departments. Capacity may be an issue

13	Is any specific training needed in order to use the procedure/technology with respect to efficacy or safety?	Yes, but given by companies supplying product

Safety and efficacy of the procedure/technology

14	What are the potential harms of the procedure/technology? Please list any adverse events and potential risks (even if uncommon) and, if possible, estimate their incidence: Adverse events reported in the literature (if possible, please cite literature) Anecdotal adverse events (known from experience) Theoretical adverse events	I have heard anecdotally about rectal wall insertion leading to rectal ulceration. I have however never known this to happen, and is not in any of the 673 cases I have audited. No literature references to this No other significant risks Patient outcome satisfaction data good
15	Please list the key efficacy outcomes for this procedure/technology?	Decrease in rectal dosimetry and PROMs data on rectal toxicity
16	Please list any uncertainties or concerns about the efficacy and safety of this procedure/?	Just cost
17	Is there controversy, or important uncertainty, about any aspect of the procedure/technology?	No
18	If it is safe and efficacious, in your opinion, will this procedure be carried out in (please choose one):	Most or all district general hospitals. - Yes A minority of hospitals, but at least 10 in the UK. Fewer than 10 specialist centres in the UK.

		Cannot predict at present.

Abstracts and ongoing studies

19	Please list any abstracts or conference proceedings that you are aware of that have been recently presented / published on this procedure/technology (this can include your own work). Please note that NICE will do a comprehensive literature search; we are only asking you for any very recent abstracts or conference proceedings which might not be found using standard literature searches. You do not need to supply a comprehensive reference list but it will help us if you list any that you think are particularly important.	
20	Are there any major trials or registries of this procedure/technology currently in progress? If so, please list.	

Other considerations

21	Approximately how many people each year would be eligible for an intervention with this procedure/technology, (give either as an estimated number, or a proportion of the target population)?	Potentially all EBRT patients for Ca Prostate
22	Are there any issues with the usability or practical aspects of the procedure/technology?	This can vary depending on products. NB. There are 3 1. Balloon 2. SpaceOAR hydrogel, Boston Scientific

		3. Barrigel, Pallette Life Science
23	Are you aware of any issues which would prevent (or have prevented) this procedure/technology being adopted in your organisation or across the wider NHS?	
24	Is there any research that you feel would be needed to address uncertainties in the evidence base?	
25	Please suggest potential audit criteria for this procedure/technology. If known, please describe: − Beneficial outcome measures. These should include short- and long-term clinical outcomes, quality-of-life measures and patient-related outcomes. Please suggest the most appropriate method of measurement for each and the timescales over which these should be measured. − Adverse outcome measures. These should include early and late complications. Please state the post procedure timescales over which these should be measured:	Beneficial outcome measures: Adverse outcome measures:

Further comments

26	Please add any further comments on your particular experiences or knowledge of the procedure/technology,	

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Declarations of interests

Please state any potential conflicts of interest relevant to the procedure/technology (or competitor technologies) on which you are providing advice, or any involvements in disputes or complaints, in the previous **12 months** or likely to exist in the future. Please use the NICE policy on declaring and managing interests as a guide when declaring any interests. Further advice can be obtained from the NICE team.

Type of interest *	Description of interest	Relevant dates	
		Interest arose	Interest ceased
Direct - financial	I have received an honorarium from Boston Scientific (who make one of the available products) to produce an insertion video (available on youtube if you search for Charlesworth + SpaceOAR)	**2019**	**2020**
Direct - financial	I advise GenesisCare UK about urology, and am paid by them for by role with in their 'Clinical Reference Group'. GenesisCare UK currently support both injectable products available in the UK. www.genesiscare.co.uk	**2019**	**Ongoing**

☒ I confirm that the information provided above is complete and correct. I acknowledge that any changes in these declarations during the course of my work with NICE, must be notified to NICE as soon as practicable and no later than 28 days after the interest arises. I am aware that if I do not make full, accurate and timely declarations then my advice may be excluded from being considered by the NICE committee.

Please note, all declarations of interest will be made publicly available on the NICE website.

Print name:	**Philip Charlesworth**
Dated:	**17/09/2021**

NICE National Institute for Health and Care Excellence

Professional Expert Questionnaire

Technology/Procedure name & indication: **IP1316/2 Biodegradable spacer insertion to reduce rectal toxicity during radiotherapy for prostate cancer**

Your information

Name:	Dr Stephen Lloyd Morris
Job title:	Consultant Clinical Oncologist
Organisation:	Guys and St Thomas Hospital
Email address:	
Professional organisation or society membership/affiliation:	RCR
Nominated/ratified by (if applicable):	Click here to enter text.
Registration number (e.g. GMC, NMC, HCPC)	GMC 4200000

How NICE will use this information: the advice and views given in this questionnaire will form part of the information used by NICE and its advisory committees to develop guidance or a medtech innovation briefing on this procedure/technology. Information may be disclosed to third parties in accordance with the Freedom of Information Act 2000 and the Data Protection Act 2018, complying with data sharing guidance issued by the Information Commissioner's Office. Your advice and views represent your individual opinion and not that of your employer, professional society or a consensus view. Your name, job title, organisation and your responses, along with your declared interests will also be published online on the NICE website as part of the process of public consultation on the draft guidance, except in circumstances but not limited to, where comments are considered voluminous, or publication would be unlawful or inappropriate.

For more information about how we process your data please see our privacy notice.

☒ I give my consent for the information in this questionnaire to be used and may be published on the NICE website as outlined above. If consent is NOT given, please state reasons below:

Click here to enter text.

Please answer the following questions as fully as possible to provide further information about the procedure/technology and/or your experience.

Please note that questions 10 and 11 are applicable to the Medical Technologies Evaluation Programme (MTEP). We are requesting you to complete these sections as future guidance may also be produced under their work programme.

1	Please describe your level of experience with the procedure/technology, for example: Are you familiar with the procedure/technology?	I first used SpaceOAR for a patient undergoing Radiotherapy for Prostate cancer in January 2017 at London Bridge Hospital. The SPACEOAR was inserted by my urology colleague Mr Popert. Mr Popert and I have been treating patinets with brachytherapy since 2003 and have extensive experience of transperineal needle insertion. From 2017 to current I have been using the SpaceOAR for patients undergoing external beam radiotherapy, LDR brachytherapy, LDR brachytherapy boost to external beam radiotherapy and Cyberknife radiotherapy for prostate cancer in the private sector.
	Have you used it or are you currently using it? – Do you know how widely this procedure/technology is used in the NHS or what is the likely speed of uptake? – Is this procedure/technology performed/used by clinicians in specialities other than your own? – If your specialty is involved in patient selection or referral to another specialty for this	From Jun 2019 to Jan 2021 I have been using the SpaceOAR for patient undergoing external beam radiotherapy, LDR brachytherapy, LDR brachytherapy boost to external beam radiotherapy for prostate cancer at Guys Hospital on the NHS as part of the Innovation technology payment scheme. In March 2020 I successfully completed the SpaceOAR appliers training qualification. In April 2021 We started a service evaluation of inserting the SpaceOAR under local anaesthetic for patients at higher risk of rectal complications prior to external beam radiotherapy at Guys Hospital. This service evaluation has been funded by a patient donation the Guys Charity which has funded 50 Spacer kits for this service evaluation.

	procedure/technology, please indicate your experience with it.	
2	– Please indicate your research experience relating to this procedure (please choose one or more if relevant):	Other (please comment) I have undertaken service evaluation and audit data collection on the patients we have treated with the Space OAR at Guys Hospital using the ITP assigned kits. Our results have been presented locally at Guys hospital clinical governance and audit and we have had no complications with the patients treated. We are currently carrying out a service evaluation of the Spacer OAR inserted under local anaesthetic in patients with risk factors for high risk of rectal complications from radiotherapy. We have inserted 21 Space OAR under local anaesthetic without complication in 2021. In July 2021 we started using the new SpaceOARVUE kits which do not need an MRI scan. Our first case with the VUE was complicated by the kit blocking and the patient developed an infection and abscess requiring admission antibiotics and drainage to the abscess. The patient has completed recovered with no lasting toxicity. We have since inserter 4 VUE kits with no complication. I have audited the outcomes of patients treated privately at London Bridge hospital with the Space OAR from 2017 to 2021. We have treated 121 patients with radiotherapy and a Space OAR. We have had no compilations following the insertion and only one patient has been referred for colonoscopy and no radiation proctitis was seen.
3	How innovative is this procedure/technology, compared to the current standard of care? Is it a minor variation or a novel approach/concept/design?	The rectal spacer devices are a novel design, that when used safely make a significant improvement in radiotherapy delivery.

	Which of the following best describes the procedure (please choose one):	Established practice in the private sector and no longer new.
4	Does this procedure/technology have the potential to replace current standard care or would it be used as an addition to existing standard care?	There is no current alternative for it to replace.

Current management

5	Please describe the current standard of care that is used in the NHS.	The current standard of care on the NHS is radiotherapy without the use of a rectal spacer device, unless the device is available in the NHS centre. Some NHS centres have negotiated local commissioning contracts for funding and it is standard of care in these centres.
6	Are you aware of any other competing or alternative procedure/technology available to the NHS which have a similar function/mode of action to this? If so, how do these differ from the procedure/technology described in the briefing?	There are several commercially available rectal spacer devices and I am aware of some new devices in development.

Potential patient benefits and impact on the health system

7	What do you consider to be the potential benefits to patients from using this procedure/technology?	When the peri-rectal spacer devices are inserted by teams who are skilled in the procedure the risk of toxicity is very low and it significantly reduces the risks of rectal toxicity caused by radiotherapy for prostate cancer. In my experience the reduction in rectal toxicity using the spacer devices is greater than any reduction I have seen in rectal toxicity with newer radiotherapy techniques.
8	Are there any groups of patients who would particularly benefit from using this procedure/technology?	The clinical trial evidence shows an advantage for all patients undergoing radiotherapy for prostate cancer. There are groups of patients who are at higher risk of rectal complications who the rectal spacer would be expected to reduce the risk of complications more significantly. The groups of patients who at high risk has not been fully researched or defined. The groups of patients at higher risk for rectal toxicity include patients on anticoagulation, previous bowel conditions, haemorrhoids, diverticulitis and those receiving dose escalated radiotherapy protocols.
9	Does this procedure/technology have the potential to change the current pathway or clinical outcomes to benefit the healthcare system? Could it lead, for example, to improved outcomes, fewer hospital visits or less invasive treatment?	The Space devices have been shown to significantly reduce the cost of managing radiotherapy rectal toxicity in the NHS. It leads to significantly less referral for colonoscopy and management of rectal proctitis and rectal bleeding.
10 - MTEP	Considering the care pathway as a whole, including initial capital and possible future costs avoided, is the procedure/technology likely to cost more or less than current standard care, or about the same? (in terms of staff, equipment, care setting etc)	The cost savings comes from not having to investigate and treat rectal toxicity. This cost saving has been modelled and shown that is costs about the same as the current cost. If the Space devices can be inserted under local anaesthetic rather than general anaesthetic then there will be a cost saving to the NHS.
11 - MTEP	What do you consider to be the resource impact from adopting this procedure/technology (is it likely to cost more or less than standard care, or about	The most important initial cost is in training staff to insert the Spacer devices safely. Once this is done and the procedure is done safely and staff have appropriate time and training for the procedure it should lead to cost savings for the NHS.

	same-in terms of staff, equipment, and care setting)?	
12	What clinical facilities (or changes to existing facilities) are needed to do this procedure/technology safely?	Urology or radiology services experienced with transperineal prostate biopsies or prostate brachytherapy need to receive extra funding and resources.
13	Is any specific training needed in order to use the procedure/technology with respect to efficacy or safety?	Yes staff need to be trained on how ton insert the spacer devices safely. The best teams to do this are the oncology/radiology and urology teams currently experienced in prostate transperineal biopsy and prostate brachytherapy.

Safety and efficacy of the procedure/technology

14	What are the potential harms of the procedure/technology? Please list any adverse events and potential risks (even if uncommon) and, if possible, estimate their incidence: Adverse events reported in the literature (if possible, please cite literature) Anecdotal adverse events (known from experience) Theoretical adverse events	In experienced hands the risk of complications is very low. There are reported toxicities including pain, needle or gel injection into a nearby organ or blood vessel, local inflammation, urine retention, local rectal injury and infection. There are unique reports of pulmonary embolism, anaplylaxis, prostate abscess, rectsl wall erosion and rectourethral fistula. The MUADE data base reports 22 unique toxicity reports from 2015 to 2019. During this time period many thousands of Spacers have been inserted safely without complication.
15	Please list the key efficacy outcomes for this procedure/technology?	Acute Toxicity Spacer position and AP separation on RT planning scans. Reduction in acute and late toxicity following radiotherapy Improvement in Patient reported outcomes Cost savings to the NHS

16	Please list any uncertainties or concerns about the efficacy and safety of this procedure/?	The Spacer has not been fully tested in patients with locally advanced prostate cancer where the tumour may have invaded the rectum.
17	Is there controversy, or important uncertainty, about any aspect of the procedure/technology?	Yes there is debate in the oncology community about the levels of evidence and reproducing the results seen in the randomised controlled trial. There is however more evidence for the rectal spacers than there was when robotic surgery was introduced for prostate cancer
18	If it is safe and efficacious, in your opinion, will this procedure be carried out in (please choose one):	It should be offered in all radiotherapy centres

Abstracts and ongoing studies

19	Please list any abstracts or conference proceedings that you are aware of that have been recently presented / published on this procedure/technology (this can include your own work). Please note that NICE will do a comprehensive literature search; we are only asking you for any very recent abstracts or conference proceedings which might not be found using standard literature searches. You do not need to supply a comprehensive reference list but it will help us if you list any that you think are particularly important.	Armstong N et al. SpaceOAR hydrogel spacer for reducing radiation toxicity during radiotherapy for prostate cancer. A systematic review. Urology May 21, 2021.
20	Are there any major trials or registries of this procedure/technology currently in progress? If so, please list.	A trial of rectal spacers with SABR radiotherapy is in set up in ther UK

Other considerations

21	Approximately how many people each year would be eligible for an intervention with this procedure/technology, (give either as an estimated number, or a proportion of the target population)?	At Guys hospital we treat 350 patients with radiotherapy for prostate cancer. We have estimated that 250 of these patients would benefit from the Spacer.
22	Are there any issues with the usability or practical aspects of the procedure/technology?	It needs a technically skilled and experienced team.
23	Are you aware of any issues which would prevent (or have prevented) this procedure/technology being adopted in your organisation or across the wider NHS?	Cost
24	Is there any research that you feel would be needed to address uncertainties in the evidence base?	Further research is needed before the spacer can be used in locally advanced prostate cancer.
25	Please suggest potential audit criteria for this procedure/technology. If known, please describe: − Beneficial outcome measures. These should include short- and long-term clinical outcomes, quality-of-life measures and patient-related outcomes. Please suggest the most appropriate method of measurement for each and the timescales over which these should be measured. − Adverse outcome measures. These should include early and late complications. Please state the post procedure timescales over which these should be measured:	Beneficial outcome measures: Spacer position and AP diameter Reduction in Acute and Late radiation toxicity Improvement PROMS Reduction in GI investigstiond and cost savings Adverse outcome measures: Procedure acute toxicity

Further comments

26	Please add any further comments on your particular experiences or knowledge of the procedure/technology,	

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Type of interest *	Description of interest	Relevant dates	
		Interest arose	Interest ceased
Choose an item.	None		
Choose an item.			
Choose an item.			

☒ I confirm that the information provided above is complete and correct. I acknowledge that any changes in these declarations during the course of my work with NICE, must be notified to NICE as soon as practicable and no later than 28 days after the interest arises. I am aware that if I do not make full, accurate and timely declarations then my advice may be excluded from being considered by the NICE committee.

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Print name:	**Dr Stephen Morris**
Dated:	**2/9/21**