OPEN

International Anal Neoplasia Society Guidelines for the Practice of Digital Anal Rectal Examination

Richard John Hillman, MD,[1] J. Michael Berry-Lawhorn, MD,[2] Jason J. Ong, PhD,[3] Tamzin Cuming, MD,[4] Mayura Nathan, MD,[4] Stephen Goldstone, MD,[5] Olivier Richel, MD, PhD,[6] Luis F. Barrosso, MD,[7] Teresa M. Darragh, MD,[8] Carmella Law, MD,[9] Céline Bouchard, MD,[10] Elizabeth A. Stier, MD,[11] Joel M. Palefsky, MD,[2] Naomi Jay, PhD,[12] on behalf of the International Anal Neoplasia Society

Objective: The aim of the study was to develop recommended techniques and quality assurance metrics for the practice of Digital Anal Rectal Examination (DARE).

Materials and Methods: The International Anal Neoplasia Society undertook a literature review and, using the AGREE II technique, developed guidelines for performing DARE.

Results: A consensus was formed regarding the optimum conditions and characteristics of DARE. Several Quality Assurance metrics were developed.

Conclusions: Digital Anal Rectal Examination is a cheap and potentially universally available technique, which has the potential to facilitate the early diagnosis of anal cancers, when they are most amenable to treatment. These guidelines provide a basis for teaching the technique and may be used as for evaluation research.

Key Words: anal cancer/neoplasms, DARE, Digital Anal Rectal Examination

(*J Low Genit Tract Dis* 2019;23: 138–146)

PURPOSE

The main purpose of a Digital Anal Rectal Examination (DARE) is to detect abnormalities of the anal canal, perianus, and distal rectum, including cancers and precancerous lesions, before they become advanced and symptomatic, by systematically palpating the anal canal and perianus for abnormalities. This document focuses on who to offer DARE to, how to perform it, what standards of clinical practice may be used, and the potential lesions that may be detected.

[1]Dysplasia and Anal Cancer Services, St Vincent's Hospital, Darlinghurst, New South Wales, Australia; [2]Department of Medicine, University of California San Francisco, San Francisco, CA; [3]Central Clinical School, Monash University, Melbourne, Victoria, Australia; [4]Homerton University Hospital, Homerton Row, London, United Kingdom; [5]Icahn School of Medicine at Mount Sinai, New York, NY; [6]Academisch Medisch Centrum Universiteit van Amsterdam, Amsterdam, the Netherlands; [7]Wake Forest Baptist Health, Medical Center Boulevard, Winston-Salem, NC; [8]Department of Pathology, University of California San Francisco, San Francisco, CA; [9]St Vincent's Hospital, Darlinghurst, New South Wales, Australia; [10]Centre Médical Berger, Québec, Quebec, Canada; [11]Department of Obstetrics & Gynecology, Boston University School of Medicine, Boston, MA; and [12]Anal Neoplasia Clinic, Research and Education (ANCRE) Center, San Francisco, CA

Reprint requests to: Richard John Hillman, MD, PhD, Dysplasia and Anal Cancer Services, St Vincent's Hospital, Darlinghurst, NSW, Australia. E-mail: Richard.Hillman@unsw.edu.au

The authors have declared they have no conflicts of interest.

Institutional Review Board permission was not sought as the article does not involve research on humans.

Supplemental digital content is available for this article. Direct URL citations appear in the printed text and are provided in the HTML and PDF versions of this article on the journal's Web site (www.jlgtd.com).

DOI: 10.1097/LGT.0000000000000458

BACKGROUND

Anal cancer is a stigmatized condition that frequently presents late, with corresponding poor prognosis, and typically requires chemoradiotherapy. It is most commonly anal squamous cell carcinoma (ASCC), although occasionally the pathology may be adenocarcinoma, melanoma, and others.[1] Anal cancer, is rare in the general community but occurs more commonly in specific populations, such as HIV-infected men who have sex with men (MSM), who have rates more than 80 times higher than HIV-uninfected men.[2] Other immunocompromised populations[3] and women with previous human papillomavirus (HPV)-associated anogenital disease also have higher rates.[4] Furthermore, the annual incidence of ASCC is increasing, particularly in these high-risk populations. The mainstay of curative treatment is to preserve the anal canal, with combined chemoradiotherapy, or with local excision surgery for small perianal cancers.[5,6]

There are many epidemiologic, virologic, cytologic, and histologic similarities between ASCC and cervical squamous cell cancer, including the presence of the precursor, high-grade squamous intraepithelial lesions (HSILs). Such similarities have fostered calls for the introduction of screening programs, striving to replicate the public health successes of the cervical cancer/cervical HSIL screening programs.[7]

Although the potential benefits of such an approach in the anus may be substantial, there are currently a number of challenges in implementing cytologic/high-risk HPV DNA screening approaches for the identification of HSIL and referral for treatment. These include the following:

i) the reduced specificity of anal cytological abnormalities at predicting the presence of histological HSIL, compared with in the cervix[8]
ii) the technical challenges and lack of widespread availability of the diagnostic test, high-resolution anoscopy (HRA)[9]
iii) the lack of consensus regarding the optimum management strategies for treating anal HSIL[10,11]
iv) conflicting evidence regarding the cost-effectiveness of such an approach[11–13]

Until these matters can be resolved, it has been suggested that a test such as DARE should be used, as a minimum, to establish the presence of cancers.[6,14,15] These calls are based on the following observations:

i) Most anal cancers are currently diagnosed at a late stage, indicating that the lesions may have been palpable for some time before presentation. For example, in a large United Kingdom cohort of 8,640 people living with HIV (40,126 patient years of follow-up), 10 (38%) of the 26 cancers found were larger than 5 cm.[16] Furthermore, in 585 anal cancer patients in the United Kingdom, only 13% of anal canal tumors and 10% of anal margin tumors were smaller than 2 cm (i.e., stage 1).[17]

ii) Anal cancer survival outcomes are related to stage at presentation.[18–20] For example, a study of 6,411 patients with primary invasive anal cancer showed that cancers less than 2 cm at diagnosis had an 80% 5-year survival, compared with 45% to 65% when the cancer was more than 2 cm and 20% for cancers that had metastasized.[21] A French series of 69 patients with anal cancers less than 1 cm reported a 100% 5-year survival[22]
iii) Simple surgical excision may be curative in localized disease, avoiding the morbidity and costs associated with chemoradiotherapy[23]
iv) DARE potentially offers the opportunity to diagnose smaller anal cancers at an earlier stage, when treatment is likely to be more effective[24]
v) A large study of DARE screening in MSM living with HIV found it to be simple and safe, with no major reported adverse effects[25]
vi) Men taught self-examination were able to detect a variety of lesions as small as 3 mm, with a sensitivity of 71% to 80% and specificity 92% to 100%[26]
vii) DARE has been found to be cost-effective for MSM living with HIV aged 50 years or older in Australia, with repeated examinations more effective than "once off" screening[27]
viii) DARE has been found to be acceptable in MSM living with HIV,[28] with 99% willing to continue to receive an annual DARE.[25] Acceptability in other groups has not yet been assessed.
ix) Anal screening strategies do not seem to have a general impact on mental health although, in some instances, may increase health-related worry.[29] It could potentially be challenging for people who have been sexually abused.
x) DARE may be used to evaluate for anal cancer persistence or recurrence after radiation and chemotherapy[30]

Although digital rectal examination (DRE) is well described in the literature,[31] there have been few studies evaluating the sensitivity and specificity of DARE in detecting anal masses. Furthermore, although a variety of techniques are used to teach and evaluate DRE training in medical schools,[32] students are performing very few DREs before graduation.[33]

In 1 center with more than 20-year experience in providing anal cancer screening for MSM living with HIV with DARE, anal cytology, and HRA, 27 anal cancers were detected as part of the screening process.[34] Of note, 23 (85%) of 27 had a mass, area of induration, or ulcer that could be palpated or seen and detectable with an anal examination. Only 4 men did not have any palpable abnormalities, and their cancers detected were solely by vascular changes visualized and biopsied during HRA.

In an anal cancer screening study of 102 MSM living with HIV and undergoing DARE, only 4 men required a specialist referral.[28] Similarly, in a study of 327 MSM living with HIV receiving an annual DARE, 5% of men required a specialist referral.[25]

As a consequence of the increasing recognition of DARE, a number of professional bodies now recommend DARE (Ong et al,[14] ASHM,[35] Clutterbuck et al,[36] Steele et al,[6] AIDS Info.[37]

WHAT IS A DARE?

A DARE is an extension of DRE. However, unlike a DRE, a DARE also includes palpation of the entire anal canal and visualization/palpation of the anal margin (defined as 5 cm distal to the anal verge). In addition to the situations listed hereinafter, consideration should also be given to performing DARE whenever DRE is routinely performed.

Objectives

- The primary objective of a DARE is to identify the presence of any palpable abnormalities that require further evaluation, especially anal and distal rectal cancers.
- Secondary objectives may be to examine the prostate in men and pouch of Douglas in women.

As with DRE, DARE relies on the clinician's ability to recognize changes in texture and the presence of masses. In this manner, it is potentially possible to identify early palpable cancers and differentiate them from other benign findings.

The procedure for DARE is not currently standardized and variations in DARE procedural techniques worldwide are not well documented.

WHO WOULD POTENTIALLY BENEFIT FROM DARE?

There is currently no evidence on which to base recommendations regarding the frequency of performing DARE in the setting of detection of anal and rectal cancers. Such recommendations should be based, at least in part, on the frequency of anal cancer in the particular target population. Table 1 lists suggested target groups, with proposed DARE frequencies.

TABLE 1. Groups Who May Potentially Benefit From DARE, With Proposed Frequencies

Group	Minimum[a] proposed DARE frequency
Those with symptoms suggesting anal cancer such as: bleeding, anal/perianal mass, tenesmus, pain, altered bowel habit (read, Read et al., 2013)[38]	Immediately, with referral for anoscopy, HRA, or to a colorectal specialist if the initial DARE is negative
HIV-positive MSM	At least annually in men ≥35 y
Those with demonstrated cytologic or histologic anal HSIL	At least annually
Those with a history of treated anal squamous cell carcinoma	Every 4 mo after completion of radiation for first 2 y, then every 6 mo for the next 3 y, then at least annually (Wright et al., 2010)[39]
Other immunosuppressed populations, such as other groups with HIV infection and recipients of solid organ transplants	At least annually in those ≥50 y
HIV-negative MSM	Every 2 to 5 y in those ≥50 y
Women with a history of cervical, vulvar or vaginal neoplasia or cancer	Every 2 to 5 y, depending on further risk assessment (Moscicki et al.,[15] 2015)

Colonoscopy may miss anal canal lesions and performing a DARE potentially provides an opportunity to assess the anal canal while the patient is sedated.

[a]Frequency may increase, depending on risk assessment, such as anal history, degree of immunosuppression, age, and smoking status.

WHAT IS THE OPTIMUM WAY TO CONDUCT A DARE?

Preparation

- An anal history must be taken. This may include the following: sexual history, history of warts, anal intraepithelial neoplasia, hemorrhoids, fissure, fistula, and previous surgery
- Elicit any history of anal symptoms, including lumps, bleeding, discharge, altered bowel habits, pain, and tenesmus. Note duration and any change over time. The use of anal douching or enemas may be associated with mucosal swelling.
- The reasoning behind, and the process of, performing a DARE must be explained carefully.
- It should be regarded as part of a routine clinical examination. However, informed consent may need to be obtained, as per local policies.
- The use of chaperones during intimate examinations should be considered, as per local policies.
- Place the patient in the optimum position for performing the examination. This considers privacy and ensures the maximum comfort for the patient that is consistent with a thorough examination. Clinicians typically place the patient in the left lateral position, with the knees up toward the chest, but sometimes may use the lithotomy, prone, or right lateral positions.
- Ask the patient to take slow, deep breaths. Some clinicians ask patients to actively relax their external anal sphincter.
- Inform the patient that the examination is about to start and that they will feel you touching their anal area. They may feel the urge to evacuate; it is important to emphasize that this will not happen.
- If swabbing for anal cytology and/or HPV DNA is planned, this should always be performed *before* the DARE, as lubricant may interfere with cytological analysis.
- Testing for anal sexually transmitted infections should also be considered before the DARE (Summary Box 1, http://links.lww.com/LGT/A109).

Performing the DARE

Note: These instructions are for a patient in the left lateral position. The technique varies slightly if the patient is in a different position. An overall diagram of the procedure is illustrated in Supplemental Figure 1, http://links.lww.com/LGT/A106.

- Always use lubricant. This may also contain a topical anesthetic agent, for example, if HRA is planned to follow the DARE. Actively solicit whether the patient feels any tenderness at any stage during the examination.
- With the nonexamining hand, gently part the buttocks, so that the anus is fully exposed.
- Place a gloved, lubricated, index finger near the external anal margin.
- Apply lubricant to the anal verge with the examining finger. This allows the patient to get used to feeling the finger. Gently work the lubricant inside the distal anal canal, gradually applying pressure to the sphincter muscle, continuing to work the lubricant into the anal canal as the sphincter relaxes.
- Next, apply gentle, sustained pressure to the external sphincter. Do not force. Be patient, it will soon relax.
- Once the external anal sphincter is relaxed, insert the index finger until the free space of the rectum is felt, that is, above the anorectal ring. Typically, this coincides with the proximal interphalangeal joint of the examiner's finger resting at the level of the anal verge.
- There are 2 different options from here:
  a) Longitudinal sweeps
    - Start proximally, in the rectum. Apply gentle lateral pressure and slowly withdraw the finger to the superficial external sphincter, working distally (caudally). If the patient is in the left lateral position, the first area examined is the right lateral wall of the rectum. Do not withdraw the finger completely. Note any irregularities.
    - Reinsert the finger to the level of the anorectal junction and rotate the finger through 30 degrees in a counter-clockwise fashion (if the patient is in the left lateral position), carefully palpating the anorectal ring and distal rectum. The area of palpation on each occasion should slightly overlap, to ensure that no part of the walls of the anal canal is missed.
    - Repeat the process, thus examining the entire surface mucosa of the walls of the anal canal, from proximal to distal.
    - Then starting back in the right lateral position, sweep the finger circumferentially to palpate the anorectal ring and distal rectum.
    - Pay particular attention to the posterior space and end up anteriorly, ensuring palpation of the anterolateral sulci of the prostate and the anterior walls of the anal canal. Using this technique, the prostate or rectovaginal septum can be palpated through the anterior wall.
    - Note any blood or discharge on the glove.

  b) Circumferential sweeps
    - Sweep the examining finger circumferentially in the rectum, applying gentle pressure to the lateral walls.
    - Then pull the finger back to the area where the sphincters grab the finger. This is the anal canal.
    - Sweep the examining finger circumferentially around the anal canal, applying gentle pressure to the lateral walls.
    - Withdraw your finger, feeling the circumference of the anal canal at each level. Be aware that the anterior aspect is most easily missed.

For Both Methods

- Note any irregularities.
- Ensure that the entire circumference of the distal rectum and anal canal are palpated. The clinician will need to change the position of their finger to ensure that the examination has been fully completed.
- While the finger is positioned anteriorly, palpate the prostate in men, noting the contour and size through the anterior wall. Note any nodules or areas of asymmetric induration, localized areas of softness or tenderness.
- The posterior vault of the rectum should be carefully palpated for masses, by bending the finger to follow the natural curve. The puborectalis sling can be felt forming part of the pelvic floor. In women, the cervix, pouch of Douglas, and a retroverted uterus may be felt.
- When the examining finger is back at the starting point, use the pad of your finger to palpate the right lateral distal anal canal. Palpate the distal anal canal using a sweeping motion, back and forth anteriorly and posteriorly. Repeat from the left lateral position. Ensure that the distal anal canal is fully palpated through 360 degrees.
- A full examination may take up to 1 minute to perform. However, the procedure is uncomfortable for the patient. With a systematic approach and increasing experience, providers should aim to complete the DARE more quickly.
- Repeat if unsure. Lesions may be missed if the examination is not done carefully.
- Record any abnormalities.
- Note any blood or discharge on the glove.

Perianal Examination

- With the nonexamining hand, gently part the buttocks, so that the anus is fully exposed.

- Inspect the perianal area (anal margin) to 5 cm distal from the anal verge. Note any visible abnormalities. Gently run the examining finger over the perianal skin to identify any lesions that might not be readily visible but may include abnormalities such as nodules, thickening, induration, or ulceration. This is particularly important when hair obscures the perianal skin.

Digital Anal Rectal Examination Performed by Patient

In the time interval between clinician examinations, it may be acceptable and feasible for interested patients to conduct their own DARE or for their partner to do the examination.[40] Because of the risk of false negatives, self-DARE should only be offered to select high-risk individuals.

It may be possible to train lay people to detect abnormalities using DARE, with high concordance to clinician detection.[26] People who find an abnormality should be encouraged to present to a healthcare professional, who can help verify whether significant pathology is present. This may encourage them to be more familiar with their own anatomy and thereby potentially detect changes earlier. However, because this is a nascent area of research, patients who choose to conduct their own DARE should still have an annual DARE performed by their clinician, and they should be monitored for any adverse consequences of regular self-examination, such as changes in quality of life through increased cancer worry (Summary Box 2, http://links.lww.com/LGT/A110).

DESCRIPTION OF FINDINGS

Anatomic Terms

Standard anatomic location reporting is crucial to orient any subsequent care or re-examination by different providers.

Supplemental Figure 2, http://links.lww.com/LGT/A107 illustrates that the anus is divided into the anal canal and perianus. The anorectal area is divided into following distal/proximal regions:

- distal rectum
- anorectal ring
- midcanal
- dentate line
- distal canal
- anal margin
- perianus

The perianal skin extends 5 cm laterally from the anal verge and is visualized by gentle retraction of the buttocks.

Location Descriptors

The location descriptors used should be anatomic (i.e., anterior/posterior and left/right), because these are independent of the position of the patient. The use of "o'clock" terminology should be avoided wherever possible because, for example, "12 o'clock" varies from right lateral, posterior, or anterior, depending on whether the patient is in a left lateral, prone, or lithotomy position, respectively.

The anal canal can be divided into octants, circumferentially, as illustrated in Supplemental Figure 3, http://links.lww.com/LGT/A108.

Digital Anal Rectal Examination Descriptors

The details in Table 2 should be recorded.

POSSIBLE OUTCOMES

Common Findings

- Cancers may feel like hard, irregular lumps, sometimes with tenderness and ulceration. They do not disappear on pressure and may be quite deep. There may be blood on the examining finger.
- Earlier-stage smaller cancers may feel like thickening or focal granularity and may be quite small.
- Keratinized perianal warts typically feel like small, partially mobile grains of soft rice. Anal canal warts may have a softer texture.
- Thrombosed external hemorrhoids are generally palpable, visible, and painful, but generally internal hemorrhoids are not palpable and not painful.
- Folds of mucosa (columns of Morgagni) disappear when rolled under the examining finger
- Anal papillae at the dentate line can often be palpated
- If the patient is symptomatic (or there is otherwise a high index of suspicion) and the DARE is initially negative, consider the following:
  - Repeating the DARE
  - Simple proctoscopy to visualize any lesion
  - Seeking a second opinion, such as from a colorectal surgeon
  - Proceeding to HRA
  - Examination of inguinal lymph nodes
  - Examination under anesthetic

- Any suspicious mass should be further investigated, as a matter of urgency.
- If HRA is also performed, the observations should be correlated with the DARE findings. Note that submucosal cancers may have no discernible HRA abnormalities, other than slight protrusion or enlarged glandular tissue.

When Significant Pain Is Present

- If the process is too painful to complete fully, then stop. Do not force a patient to undergo a painful examination. If there is suspicion, then arrange an examination under anesthetic.
- It may be possible to infiltrate local anesthetic around a mass or to perform an anal canal block to facilitate examination
- Infections such as *Chlamydia trachomatis* (including serovars associated with lymphogranuloma venereum), *Neisseria gonorrhoeae*, and herpes simplex may be associated with anal pain, and testing for these should be considered.
- If a fissure is present and there is a low index of suspicion for cancer, then treat with topical nitrates for 6 weeks (if no history of migraine), possibly with stool softeners, and re-examine.

When a Rectal Lesion Is Identified

- Both rectal and anal pathologies can be beyond the area that can be seen during an HRA. In these situations, consider referral to a colorectal surgeon, who is able to perform a flexible sigmoidoscopic examination, with a view of the rectal ampulla.

False Negatives

This is the major concern for many providers in conducting a DARE. It leads to incorrect reassurance of the absence of an anal cancer, with potentially very serious results. A high index of suspicion and performance of systematic and thorough examinations regularly are likely to reduce the risk of this occurring. Patients should be encouraged to re-present promptly, if any new symptoms or any new abnormalities are detected on self-examination, or if

TABLE 2. Digital Anal Rectal Examination Descriptors

Section	Pattern
Adequacy of examination	Adequate or inadequate for a given reason, such as a patient unable to tolerate the procedure
Normal findings	Entire anal canal palpated Anal canal smooth in texture, with no palpable abnormalities If present, the prostate smooth in texture and regular in outline, with a palpable median sulcus Sphincter tone is within normal limits Entire perianus visualized to 5 cm distal to the anal margin ("verge") with no visible or palpable abnormalities[a]
Abnormal anal canal DARE findings[b]	Location of the lesion – 1 or more of the following: Extends into the rectum Anal canal: proximal, midcanal, or distal canal Protruding Extends to perianus Location of the lesion by anterior/posterior/left/right position and proximal to distal location Type of lesion Mass Linear lesion, such as a fistula tract Focal area of thickening or granularity Size of the lesion Ability to feel proximal limit Length Width Percentage of circumference involved Contour Smooth/irregular/ulcerated/papillary/fleshy Soft/hard/compressible Superficial/submucosal Fixed/mobile Blood on examining finger Tenderness Altered sphincter tone (either increased or decreased)
Abnormal perianal DARE findings[c] (within 5 cm of the anal margin)	Location of the lesion: Extending beyond the anal margin Entirely perianal (visualized with gentle retraction or anoscope not needed) Location of the lesion by anterior/posterior/left/right position Size of the lesion Anterior/posterior dimensions Proximal/distal dimensions Proportion of perianus affected Appearance Smooth/irregular Macular/papular/exophytic Erythema/scaling/pigmentation Well defined edge/diffuse Ulceration Satellite lesions Friability Visible bleeding Tenderness
Option, if clinically indicated	Presence of palpable inguinal lymphadenopathy

[a]Where DARE is conducted as part of a high-resolution anoscopy, findings after application of 5% acetic acid and examination with colposcope.

[b]Abnormal findings related to adjacent organs such as the prostate, rectum, cervix, and vagina may also be documented.

[c]Photography may be helpful, with patient consent.

existing symptoms worsen. Providers should consider using an automated reminder system to ensure that regular reminders for examination are generated.

Potential False Positives

A false positive (where the patient is identified as having an abnormality on DARE, but no anal cancer is found) may be inconvenient but nonetheless may result in the diagnosis of significant other pathology. These include the following:

- Hemorrhoids
- Low-grade squamous intraepithelial lesions (especially when exophytic)
- Anatomical variants, such as hypertrophied anal papillae

- Scarring from previous surgery/trauma/radiotherapy
- Anal fissure
- Anal fistula
- Abscesses, including those resulting from infections with *C. trachomatis* and *N. gonorrhoeae*
- Lymphogranuloma venereum
- Ulcers, such as those caused by herpes simplex, cytomegalovirus, and mycobacterial infections
- Tumors other than ASCC, such as adenocarcinomas, low rectal tumors, lymphomas, melanomas, gastrointestinal stromal tumors, and neoplasms from adjacent pelvic organs

Why Do We Need DARE Standards?

The establishment of common standards for DARE would potentially be valuable to the following:

1. Ensure minimum competencies for the clinical practice of DARE
2. Define minimum acceptable standards for professional continuing clinical practice and contribution to research studies
3. Allow more meaningful comparison of research data. This is particularly relevant after the recent development of uniform histological reporting standards for anogenital HPV-associated squamous lesions[41]
4. Assess the value of individual components of training, including the effect of experience, techniques used, equipment, and length of time performing HRA on developing proficiency
5. Provide uniformity of practice across a wide range of providers. Specialties that may potentially perform DARE include primary care physicians, infectious disease specialists, colorectal surgeons, gastroenterologists, immunologists, gynecologists, oncologists, HIV/sexual health physicians, and radiation oncologists.

Proposed Minimum Standards for Conducting a DARE

In the absence of data indicating optimum practice, the International Anal Neoplasia Society has developed the following guidance for the practice of a DARE. Although this may vary somewhat according to the clinic population, referral pattern, case mix, level of expertise, training commitments, and research activities, the key components should include the following:

- The *room* for conducting examinations must permit adequate privacy, confidentiality, and dignity and have nearby toilet facilities and adequate lighting.
- Elicitation and recording of any *symptoms* suggestive of anal cancer, such as a mass, fresh rectal bleeding, tenesmus, or pain.
- *Patient information* should be given, detailing the procedure, ideally before the examination. The information should outline the purposes of the examination, any preparation necessary, likely discomfort that may be involved, as well as the potential benefits.
- *Informed consent*, as required by local regulations and customary practice, should be obtained at all times. Depending on local practices, this may be verbal consent.
- The *position of the patient* during the procedure can be left (or right) lateral, prone, or lithotomy. Whichever is used, the patient's comfort during examination should be ensured and noted in the patient records.
- DARE findings should be *accurately recorded* in the medical notes and include anatomic location and a detailed description of lesions, using accepted descriptors (see Table 2). An impression and plan should also be recorded including a recommendation of when the next DARE is to be performed.
- *Clear policies* must be in place to ensure accurate reporting of examinations, follow-up arrangements, communication of results, and the expediting of care for urgent or cancer cases.
- A close working *relationship with surgical colleagues* is required for the prompt management of detected abnormalities. After consultation with the colleagues, there should be clear policies guiding processes for both internal and external referrals.
- *Cleaning* of the room between cases must comply with local infection control policies. Although DARE is not a sterile procedure, avoidance of cross-contamination is important. This is best carried out in consultation with the infection control department of the institution and relevant national regulatory bodies.

Training

Digital Anal Rectal Examination may potentially be conducted as part of routine clinical practice, by medical staff and other healthcare workers, depending on local policies.

In the absence of any currently available data, we postulate that the accuracy of performing a DARE will be related to the quality and extent of training received, the number of DAREs performed, and the frequency of pathology in the target population. This document serves to define the components of such a DARE training program.

Depending on their jurisdiction, those practicing may need to initially satisfy a number of training requirements, including e-learning, attendance at courses, preceptorships, mentorships, and completion of practice log books. Until further data are available, training in DARE practice may be some, or all, of the following components:

i. Incorporation of DARE into the physical examination course at medical schools and additional training for practitioners who have not been exposed to this portion of the physical exam during their education.
ii. Knowledge of anorectal anatomy and physiology.
iii. Knowledge of epidemiologic characteristics of HPV-associated anal disease and clinical features of anal HPV-associated disease, together with their diagnosis and management.
iv. Knowledge of other common anorectal conditions likely to be diagnosed during the practice of DARE.
v. Observation of an experienced DARE practitioner.
vi. Assisting a colorectal surgeon in theatre, when the patient is under sedation.
vii. Regular patient feedback.

Continuous learning and review of performance are an integral part of developing and maintaining practice techniques.

Once a defined training syllabus and assessment metrics have been developed and evaluated, further work will be required to identify which aspects of training yield the highest quality outcomes.

Practical Competencies

Before commencing independent clinical practice of DARE, clinicians should be able to demonstrate the competencies listed in Table 3.

Definition of an Adequate DARE

An adequate DARE may be defined by the criteria listed in Table 4.

TABLE 3. Practical Clinician Competencies for Performing a DARE

Conduct a consultation before the DARE, including an adequate explanation to patient of what to expect, as well as covering initial queries
Elicit pertinent medical history to determine potential risk of anal cancer
Adhere to local infection control procedures
Obtain either verbal or written informed consent, depending on local policies
Perform a digital anorectal examination
Identify, anatomically locate, and describe any abnormalities
Develop a clinical impression and differential diagnosis
Communicate the DARE findings and the pathway for future care to patient and other care providers
Refer onward appropriately
Recommend if, or when, DARE should be repeated

Quality Assurance Metrics

Good quality assurance standards aim to achieve the earliest possible diagnosis of anal cancers by:

a)maximizing the likelihood of the accurate detection of the presence and extent of early cancers and
b)capturing patient experience in order to minimize discomfort

With respect to the individual components of performing DARE, no clear evidence currently exists to support the setting of clinical practice standards. Nevertheless, there are key performance indicators that are based on a consensus of expert opinion and could potentially be monitored in the future, to obtain that evidence.

These metrics are proposed as a means of establishing initial benchmarks, against which data can be collected in a prospective fashion, and the metrics modified in response to experience. These are suggested *minimum* standards. Individual units may choose to set higher standards.

It is likely that the ability to achieve that these metrics will vary with the population being examined. As with any screening procedure, it is likely that the positive and negative predictive values will vary with the proportion of affected patients in the population.

Volume of Practice

The time taken to become proficient is inversely proportional to the volume of practice and ideally would involve a minimum of 1 DARE per week. Proposed volume of practice criteria are given in Table 5.

TABLE 4. Proposed DARE Adequacy Criteria

Informed consent has been obtained as per local protocols
A lubricated, gloved finger is used
The entire circumference and length of the anal canal has been palpated
The entire circumference of the perianus (anal margin) has been inspected and palpated
Adequate documentation of the whole examination has occurred

Palpation for inguinal lymphadenopathy may be included for patients with suspected lymphogranuloma venereum and cancer.

A full physical examination is indicated in those with a high suspicion of cancer.

TABLE 5. Proposed Volume of Practice Criteria[a]

Metric	Minimum cases	Recommended
DAREs performed per year	50	≥100

[a]It is understood that some practice settings may not have populations with high rates of anal cancer and therefore may have a lower volume of examinations.

Digital Anal Rectal Examination Quality Assurance Metrics

The proposed DARE quality assurance metrics are given in Table 6. They are currently based on expert opinion and should be reviewed as further evidence is generated.

Possible Additional Quality Assurance Metrics

Depending on practice population, the following additional metrics may be considered:

i) Audit of the percentage of patients receiving a DARE, expressed as a percentage of those who are eligible
ii) Percentage of patients in whom anal cancer was found
iii) Stages at which anal cancers were diagnosed
iv) Percentage of patients referred for diagnosis and treatment of abnormal findings
v) Patient feedback regarding experience

CONCLUSIONS

Rising rates of anal cancer, greater understanding of the importance of early diagnosis, and increasingly effective treatments have meant growing interest in the provision of DARE in a variety of settings.

We await the outcomes a number of large clinical trials (e.g. ANCHOR, SPANC, etc.) to provide the evidence base for optimum screening and management of anal HSIL. In the meantime, DARE potentially provides an acceptable and inexpensive method with which to screen those at high risk of anal cancer. It is understood that DARE is only likely to result in the detection of cancers 0.3 cm or greater in diameter, including cases with large submucosal components. Conditions such as HSILs, superficially invasive squamous carcinoma of the anus can only be detected using techniques such as HRA, or as coincidental findings when surgery has occurred for other reasons.[42]

TABLE 6. Proposed DARE Quality Assurance Metrics

Metric	Recommendation
Entire anal canal palpated and perianus fully visualized	>90% of examinations
Detection of abnormalities requiring further examination[a]	≥5% of examinations

[a]Will depend on mix of patients, such as referral practices, new or return, high risk, and treatment experience.

Digital Anal Rectal Examination can potentially be a technically, psychologically, and physically challenging examination, for both patient and healthcare worker. It therefore needs to be conducted in a sensitive, accurate, and efficient manner. Limited evidence to date suggests that DARE is acceptable to HIV-positive MSM,[28] although this needs to be evaluated in other groups. A major barrier to implementation may be reluctance among healthcare professionals.[15] However, educational initiatives targeting people likely to encounter patients at elevated risk of anal cancer may overcome some of these barriers.

There are currently few data on which to form an evidence-based practice of DARE. These guidelines were therefore developed by consultation with a diverse group of professionals from varying backgrounds, all having extensive experience in the diagnosis and management of anal cancer and its precursors.

Competent practitioners should be able to find most anal cancers, possibly as small as 0.3 cm^{26} when present, most of the time. Agreed criteria for what constitutes adequate DARE examination and acceptable levels of clinical practice will greatly facilitate the interpretation of clinical and research data, together with the development of multicenter, multinational trials designed to address this growing clinical problem.

The role that patients (or their partners) can play in performing their own DARE is potentially worth exploring, because it has the potential to identify cancers earlier than would otherwise occur. However, its effectiveness and implications require rigorous evaluation before widespread adoption.

This article proposes initial minimum competencies for the clinical practice of DARE, against which professionals can judge themselves, and providers can evaluate the effectiveness of training. Once standards have been agreed upon and validated, it may be possible to develop certification methods for individual practitioners and accreditation of sites.

REFERENCES

1. Shia J. An update on tumors of the anal canal. *Arch Pathol Lab Med* 2010; 134:1601–11.
2. Machalek DA, Poynten M, Jin F, et al. Anal human papillomavirus infection and associated neoplastic lesions in men who have sex with men: a systematic review and meta-analysis. *Lancet Oncol* 2012;13:487–500.
3. Patel HS, Silver AR, Northover JM. Anal cancer in renal transplant patients. *Int J Colorectal Dis* 2007;22:1–5.
4. Moscicki AB, Darragh TM, Berry-Lawhorn JM, et al. Screening for anal cancer in women. *J Low Genit Tract Dis* 2015;19(3 suppl 1):S27–42.
5. Glynne-Jones R, Northover JM, Cervantes A, et al. Anal cancer: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. *Ann Oncol* 2010;21(suppl 5):v87–92.
6. Steele SR, Varma MG, Melton GB, et al. Practice parameters for anal squamous neoplasms. *Dis Colon Rectum* 2012;55:735–49.
7. Gosens KC, Richel O, Prins JM. Human papillomavirus as a cause of anal cancer and the role of screening. *Curr Opin Infect Dis* 2017;30: 87–92.
8. Schofield AM, Sadler L, Nelson L, et al. A prospective study of anal cancer screening in HIV-positive and negative MSM. *AIDS* 2016;30: 1375–83.
9. Hillman RJ, Cuming T, Darragh T, et al. 2016 IANS International Guidelines for Practice Standards in the Detection of Anal Cancer Precursors. *J Low Genit Tract Dis* 2016;20:283–91.
10. Richel O, de Vries HJ, van Noesel CJ, et al. Comparison of imiquimod, topical fluorouracil, and electrocautery for the treatment of anal intraepithelial neoplasia in HIV-positive men who have sex with men: an open-label, randomised controlled trial. *Lancet Oncol* 2013;14: 346–53.
11. Macaya A, Muñoz-Santos C, Balaguer A, et al. Interventions for anal canal intraepithelial neoplasia. *Cochrane Database Syst Rev* 2012; 12:CD009244.
12. Goldie SJ, Kuntz KM, Weinstein MC, et al. The clinical effectiveness and cost-effectiveness of screening for anal squamous intraepithelial lesions in homosexual and bisexual HIV-positive men. *JAMA* 1999;281:1822–9.
13. Czoski-Murray C, Karnon J, Jones R, et al. Cost-effectiveness of screening high-risk HIV-positive men who have sex with men (MSM) and HIV-positive women for anal cancer. *Health Technol Assess* 2010;14. doi: 10.3310/hta14530.
14. Ong JJ, Chen M, Grulich AE, et al. Regional and national guideline recommendations for digital ano-rectal examination as a means for anal cancer screening in HIV positive men who have sex with men: a systematic review. *BMC Cancer* 2014;14:557.
15. Ong JJ, Temple-Smith M, Chen M, et al. Why are we not screening for anal cancer routinely - HIV physicians' perspectives on anal cancer and its screening in HIV-positive men who have sex with men: a qualitative study. *BMC Public Health* 2015;15:67.
16. Bower M, Powles T, Newsom-Davis T, et al. HIV-associated anal cancer: has highly active antiretroviral therapy reduced the incidence or improved the outcome? *J Acquir Immune Defic Syndr* 2004;37:1563–5.
17. UKCCCR Anal Cancer Trial Working Party. Epidermoid anal cancer: results from the UKCCCR randomised trial of radiotherapy alone versus radiotherapy, 5-fluorouracil, and mitomycin. *Lancet* 1996;348:1049–54.
18. Uronis HE, Bendell JC. Anal cancer: an overview. *Oncologist* 2007;12: 524–34.
19. Das P, Crane CH, Eng C, et al. Prognostic factors for squamous cell cancer of the anal canal. *Gastrointest Cancer Res* 2008;2:10–4.
20. Bentzen AG, Guren MG, Wanderas EH, et al. Chemoradiotherapy of anal carcinoma: survival and recurrence in an unselected national cohort. *Int J Radiat Oncol Biol Phys* 2012;83:e173–80.
21. National Cancer Institute SEER Program. *SEER Survival Monograph: Cancer Survival Among Adults SEER Program, 1988–2001, Patient and Tumor Characteristics*. Bethesda: National Cancer Institute, SEER Program; 2007: Cancer of the Anus. 2007.
22. Ortholan C, Ramaioli A, Peiffert D, et al. Anal canal carcinoma: early-stage tumors < or =10 mm (T1 or Tis): therapeutic options and original pattern of local failure after radiotherapy. *Int J Radiat Oncol Biol Phys* 2005;62: 479–85.
23. Glynne-Jones R, Nilsson PJ, Aschele C, et al. Anal cancer: ESMO–ESSO–ESTRO clinical practice guidelines for diagnosis, treatment and follow-up. *Radiother Oncol* 2014;111:330–9.
24. Madelaine M, Young J, Keel G, et al, eds. *Cancer of the Anus. SEER Survival Monograph: Cancer Survival Among Adults*. Bethesda: National Cancer Institute, SEER Program; US SEER program, 1988–2001, patient and tumor characteristics; 2007;Chapter 5:43–7.
25. Ong JJ, Grulich A, Walker S, et al. Baseline findings from the Anal Cancer Examination (ACE) study: screening using digital ano-rectal examination in HIV-positive men who have sex with men. *J Med Screen* 2016;23:70–6.
26. Nyitray AG, Hicks JT, Hwang LY, et al. A phase II clinical study to assess the feasibility of self and partner anal examinations to detect anal canal abnormalities including anal cancer. *Sex Transm Infect* 2018;94:124–30.
27. Ong JJ, Carroll S, Walker S, et al. Cost-effectiveness of screening for anal cancer using regular digital ano-rectal examinations in men who have sex with men living with HIV. *J Int AIDS Soc* 2016;19:20514.
28. Read TR, Vodstrcil L, Grulich AE, et al. Acceptability of digital anal cancer screening examinations in HIV-positive homosexual men. *HIV Med* 2013;14:491–6.
29. Landstra JM, Ciarrochi J, Deane FP. Psychosocial aspects of anal cancer screening: a review and recommendations. *Sex Health* 2012;9:620–7.
30. Welton ML, Fleshman JW, Beck DE, et al. eds. *Anal cancer*. ASCRS Textbook Colon Rectal Surg; 2007:482–500.

31. Nikendei C, Diefenbacher K, Köhl-Hackert N, et al. Digital rectal examination skills: first training experiences, the motives and attitudes of standardized patients. *BMC Med Educ* 2015;15:7.

32. Reis LO, Simão AF, Baracat J, et al. Digital rectal examination standardization for inexperienced hands: teaching medical students. *Adv Urol* 2013;797096.

33. Nensi A, Chande N. A survey of digital rectal examination training in Canadian medical schools. *Can J Gastroenterol* 2012;26:441–4.

34. Berry JM, Jay N, Cranston RD, et al. Progression of anal high-grade squamous intraepithelial lesions to invasive anal cancer among HIV-infected men who have sex with men. *Int J Cancer* 2014;134: 1147–55.

35. Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine. Anal cancer in men living with HIV 2018. Available at: http://www.ashm.org.au/HIV/hiv-management/anal-cancer/. Accessed June 18, 2018.

36. Clutterbuck D, Asboe D, Barber T, et al. 2016 United Kingdom national guideline on the sexual health care of men who have sex with men. *Int J STD AIDS* 2018:956462417746897.

37. AIDS Info. Preventing Anal Cancer in: Guidelines for the Prevention and Treatment of Opportunistic Infections in HIV-Infected Adults and Adolescents: US Department of Health and Human Services. Available at: https://aidsinfo.nih.gov/guidelines/html/4/adult-and-adolescent-opportunistic-infection/343/hpv. Accessed January 22, 2019.

38. Read TR, Huson KL, Millar JL, et al. Size of anal squamous cell carcinomas at diagnosis: a retrospective case series. *Int J STD AIDS* 2013; 24:879–92.

39. Wright JL, Patil SM, Temple LK, et al. Squamous cell carcinoma of the anal canal: patterns and predictors of failure and implications for intensity-modulated radiation treatment planning. *Int J Radiat Oncol Biol Phys* 2010; 78:1064–72.

40. Ong JJ, Temple-Smith M, Chen M, et al. Exploring anal self-examination as a means of screening for anal cancer in HIV positive men who have sex with men: a qualitative study. *BMC Public Health* 2014;14:1257.

41. Darragh TM, Colgan TM, Cox JT, et al. Members of the LAST project work lower anogenital squamous terminology standardization project for HPV-associated lesions: background and consensus recommendations from the College of American Pathologists and the American Society for Colposcopy and Cervical Pathology. *Arch Pathol Lab Med* 2012;136: 1266–97.

42. Berry-Lawhorn JM, Palefsky JM. Progression of anal high-grade squamous intraepithelial lesions to anal squamous cell carcinoma and clinical management of anal superficially invasive squamous cell carcinoma. *Semin Colon Rectal Surg* 2017;28:91–6.