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Module 2.01: Exudate management in patients with hidradenitis suppurativa

Summary:	Keywords:
This module considers the role of exudate within Hidradenitis Suppurativa, the challenges it creates, how to assess and measure it together with guidelines on how to effectively manage it.	Acne inversa, Drainage, Odour

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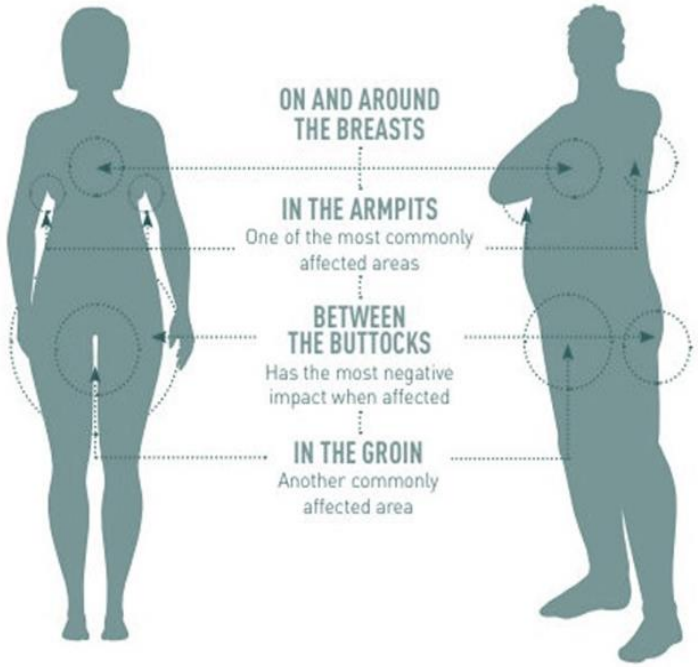
Module Overview

Exudate management in patients with Hidradenitis Suppurativa	
1. Introduction to HS	Introduction to Hidradenitis Suppurativa and it's pathophysiology
2. Wound Exudate	Definition of exudate, it's role, composition & production
3. Challenges	Key clinical & patient challenges of exudate including those specific to HS
3. Assessment	Assessing & measuring wound exudate inc. the Hidradenitis Drainage & Odor Scale (HODS)
5. Guidelines	Guidelines for exudate management in HS
6. Conclusions	Key take aways from this module
7. Review Questions	10 questions to review your learning
8. References	Sources and full references for further reading

Introduction

What is Hidradenitis Suppurativa?

- A chronic inflammatory skin disease (Ingram, 2020)
- Presents with painful, secreting, malodour lesions in areas near the apocrine or sweat glands (Fisher et al, 2020)
- Can have a profound physical and psychological impact on an individual (World Union of Wound Healing Societies, 2016)
- Most commonly involves axillary, inguinal, genitofemoral, gluteal, perinea and inframammary areas



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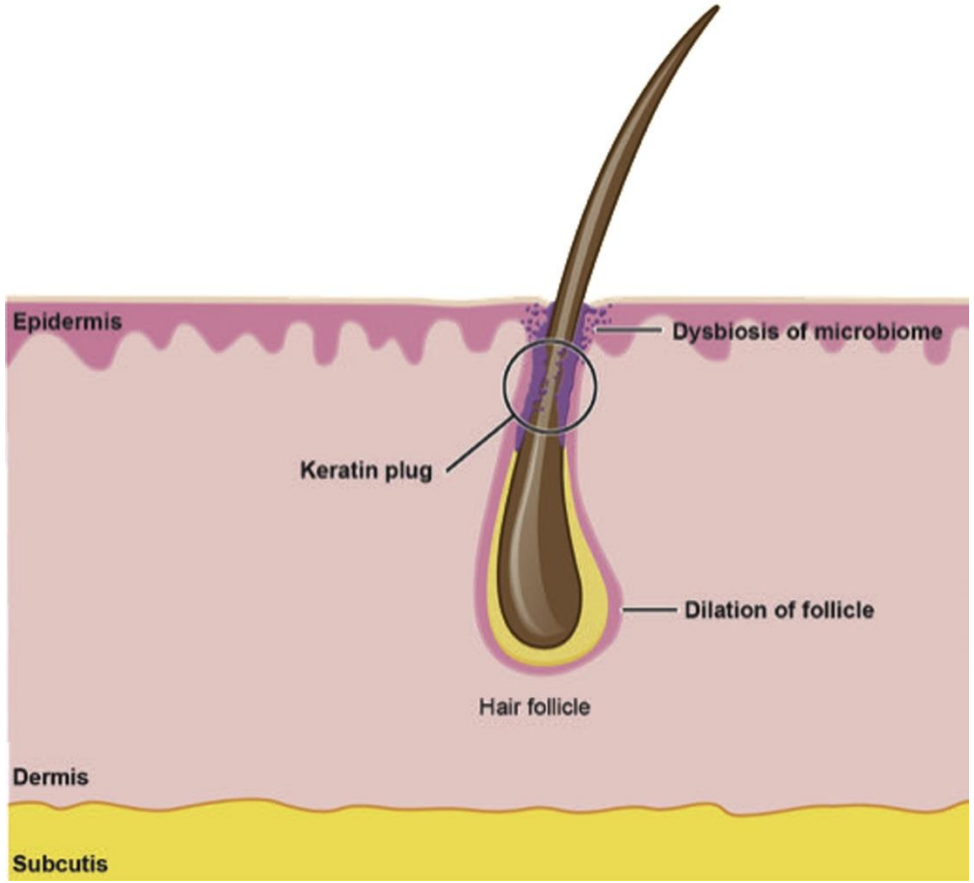
Pathophysiology

Follicular occlusion and dilation

- Blockage and inflammation of follicle & dilation of follicle

- Release of debris including keratin fibers and commensal flora, cytokine-induced inflammation

Exogenous factors that may increase risk of follicular occlusion include; smoking, obesity, mechanical friction, microorganism and genetic susceptibility

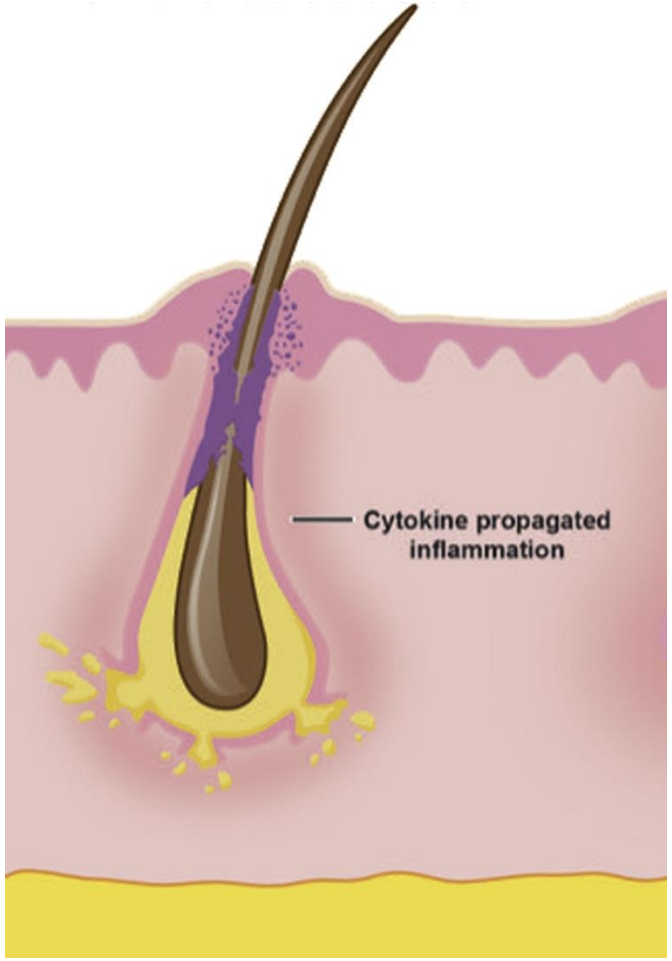


Hidradenitis suppurativa - Goldburg, Samantha R. et al. Journal of the American Academy of Dermatology, Volume 82, Issue 5, 1045 - 1058

Pathophysiology

Follicular rupture and inflammatory nodules and abscesses

- Rupture of dilated follicle
- Release of contents
- Increased inflammation

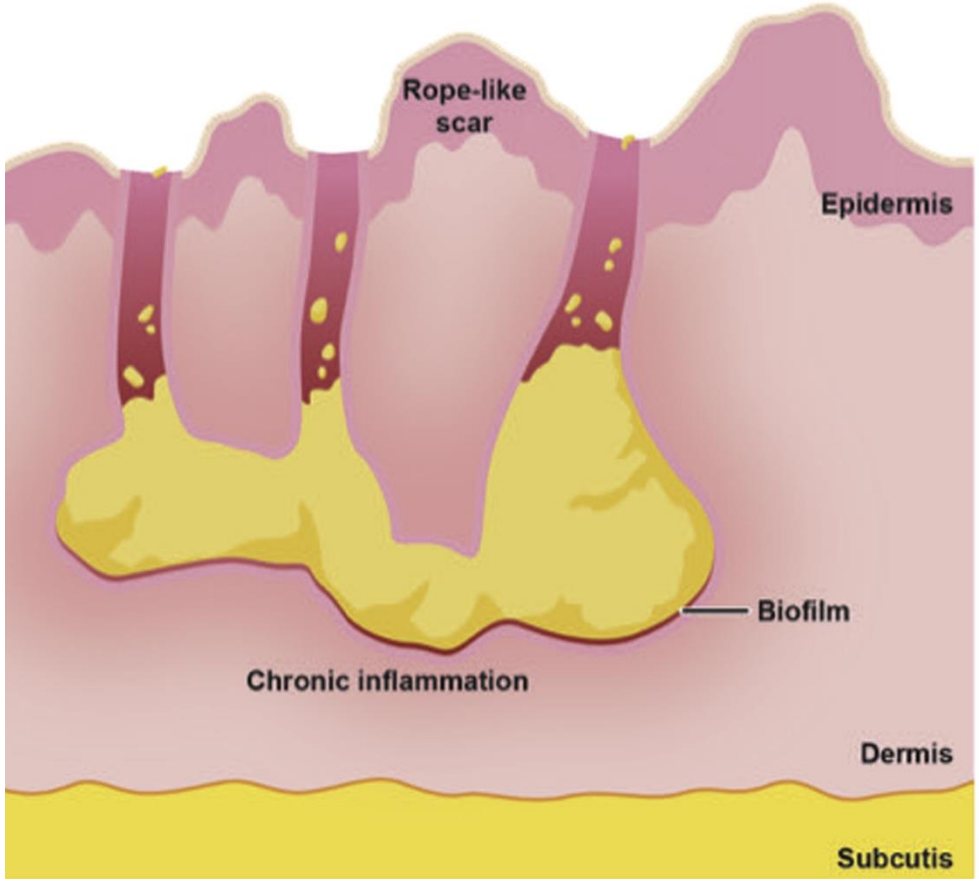


Hidradenitis suppurativa - Goldburg, Samantha R. et al. Journal of the American Academy of Dermatology, Volume 82, Issue 5, 1045 - 1058

Pathophysiology

Chronic state with sinus tracts and scarring

- Formation of tunnels (filled with fluid) between follicles and connecting to skin surface
- Chronically inflamed wounds with overproduction of Matrix Metalloproteinase



Hidradenitis suppurativa - Goldburg, Samantha R. et al. Journal of the American Academy of Dermatology, Volume 82, Issue 5, 1045 - 1058

Pathophysiology

Progression from simple nodules through to severe wounds often with significant tunnelling

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Wound Exudate (or drainage)

- Wound exudate is also known as wound fluid or wound drainage and typically contains serum, fibrin and white blood cells

- Wound exudate plays a crucial role in healing but can delay recovery when in the wrong amount or composition

- Supports healing by maintaining a moist environment and enabling immune response

- Enables diffusion of immune mediators and growth factors, supports cell migration for tissue repair and promote autolysis of dead or damaged tissue

- Wounds with a moist environment heal more quickly than those that dry out and form a scab. In fact, moist wounds heal 2-3 times faster than dry wounds (Swezey, 2014)

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Composition of Wound Exudate

Wound exudate is derived from blood and so contains a wide variety of components

Component	Comments
Water	Prevents tissue dehydration
Fibrin	Blood clotting agent
Glucose	Energy source for cells
Immune Cells , e.g. Lymphocytes and macrophages	Immune defence, growth factor production
Platelets	Blood clotting
Growth Factors	Stimulate cellular growth
Proteases (protein-degrading enzymes)	Degradation of proteins, assisting in autolysis and cell migration, scar remodeling
Metabolic waste products	By-products of cellular metabolism
Micro-organisms	Present in all wounds
Wound debris/ dead cells	Proteases in exudate aid autolysis of devitalised tissue

Trengove N, Langton SR, Stacey MC (1996). Biochemical analysis of wound fluid from non-healing and healing chronic leg ulcers. Wound Rep Reg 4(2): 234-9
White R, Cutting KF (2006) Modern Exudate Management: a review of wound treatments. World Wide Wounds. Available at www.worldwidewound.com/2006/September/White/Modern-Exudate-Mgt.html

Wound Exudate Production

Factor Type	Examples of factors that may alter exudate production	
	Increased exudate production	**Decreased exudate production**
Wound healing stage	• Inflammatory stage of normal wound healing	• Towards the end of the healing process
Local factors	• Wound infection/biofilm, inflammation or trauma (e.g. surgical debridement) • Wound bed foreign body • Oedema near the wound – e.g. due to venous insufficiency, vena cava obstruction, lymphatic disfunction/ lymphoedema • Wound bed sinus • Wound bed fistula – e.g. urinary, enteric, lymphatic or joint space • Tumour	• Wounds with dry eschar • Ischaemia of the wound location
Systemic factors	• Congestive cardiac, renal or hepatic failure • Infection/ inflammation • Endocrine disease • Systemic medication – e.g. calcium channel blockers, non-steroidal anti-inflammatory drugs (NSAIDS), steroids, glitazones • Obesity • Fluid overload during intravenous therapy • Malnutrition • Increased age • Low serum albumin levels • Raised C-reactive protein (CRP)	• Dehydration • Hypovolaemic shock • Microangiopathy
Practical factors	• Wound position – e.g. wound is in a dependent position on the lower limbs or sacral area • Heat • Reduced willingness or ability of the patient to co-operate with pharmacological or non-pharmacological treatment • Inappropriate dressing/device/intervention	• Inappropriate dressing/device use or intervention

World Union of Wound Healing Societies (WUWHS) Consensus Document. Wound Exudate: effective assessment and management, Wounds International, 2019

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Exudate – Clinical Challenges

- Excessive exudate can lead to maceration, leakage and infection
- Insufficient exudate may delay autolytic debridement
- Malodour may indicate infection
- Wound exudate can delay healing when the amount of exudate is excessive or insufficient, has an abnormal composition or is in the wrong place (Moore & Strapp, 2015)
- Factors that may influence increased exudate production include; wound bed sinus or fistula, systemic inflammation, anti-inflammatory drugs, obesity or even inappropriate wound dressings

Exudate – Patient Challenges

Excessive exudate can have a serious psychosocial impact on patients and reduce quality of life (Benbow & Stevens, 2010).

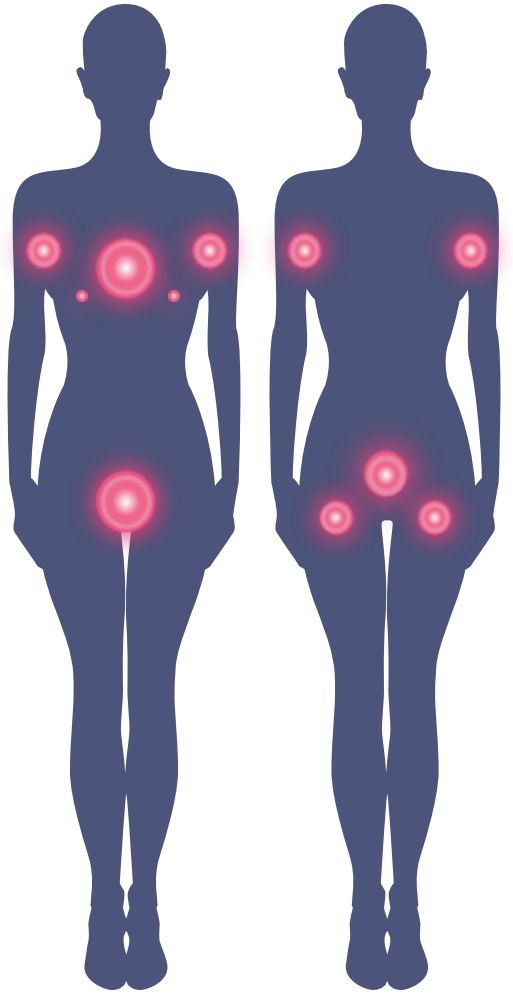
For example, patients' work, social and home lives may be disrupted by dressing changes or by fear and embarrassment related to leakage or odour, which can prevent patients leaving their homes.

Problems associated with excessive exudate production (WUWHS, 2007, Dowsett et al, 2012, Wounds UK, 2013

- Leakage and soiling
- Malodour
- Increase risk of infection
- Frequent dressing changes
- Discomfort/pain
- Protein loss and fluid/electrolyte imbalance
- Periwound skim damage, e.g. maceration and erosions
- Wound expansion
- Psychosocial effects

Exudate – HS Specific Challenges

- Exudate management challenges can be particularly challenging in HS where the parts of the body most affected are the armpits, breasts, groin and buttocks;
  - Joint movement can compress wounds & increase exudate flow
  - Friction can worsen wounds and increase flow of exudate
  - HS is itself and inflammatory condition
  - Interconnected sinuses can typically be present
  - ‘Difficult-to-dress’; can be challenging to get wound dressings to stay in place securely



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Assessing Wound Exudate

- Consider type, colour, consistency and amount
- Assess periwound skin for maceration or irritation
- Evaluate odour for potential infection
- Use structured holistic wound assessment frameworks like TIME(S)
- For HS, use the Hidradenitis Odor & Drainage Scale (HODS)

Type	Colour/Opacity	Consistency	Comments
Serous	Clear, amber or straw-coloured	Thin, watery	• Normal during inflammatory and proliferative phases or wound healing • An increase in serous exudate may be a sign of infection • In excessive amounts may be associated with congestive cardiac failure, venous disease, malnutrition or be due to fluid draining from a urinary or lymphatic fistula
Serosanguineous	Clear, pink to light red	Thin, slightly thicker than water	• May be considered normal during inflammatory and proliferative phases of healing • Pinkish due to the presence of blood cells • May also be found post-operatively or after traumatic dressing removal
Sanguineous	Red	Thin, watery	• Reddish due to the presence of red blood cells • May indicate new blood vessel growth or disruption of blood vessels • May be associated with hypergranulation
Seropurulent	Cloudy, creamy, yellow or tan	Thin	• Serous exudate containing pus • May also be due to liquefying necrotic tissue • May signal impending infection
Fibrinous	Cloudy	Thin, watery	• Cloudy due to the presence of fibrin strands • May indicate inflammation, with or without infection
Purulent	Opaque, milky, yellow, tan or brown; sometimes green	Often thick	• Mainly pus (neutrophils, inflammatory cells, bacteria) and may include slough/ liquefied necrotic tissue • Indicates infection • Green colouration may be due to infection with Pseudomonas aeruginosa • May be associated with odour
Haemopurulent	Reddish, milky, opaque	Thick	• Mixture of blood and pus • Often due to established infection
Haemorrhagic	Red, opaque	Thick	• Mostly due to presence of red blood cells and indicative of increased capillary friability or trauma to the wound • May indicate bacterial infection

Types of wound exudate from WUWHS Exudate Management (Cutting & White, 2002, Bates-Hensen et al, 2012, Wounds UK, 2013, Vowden et al, 2015)

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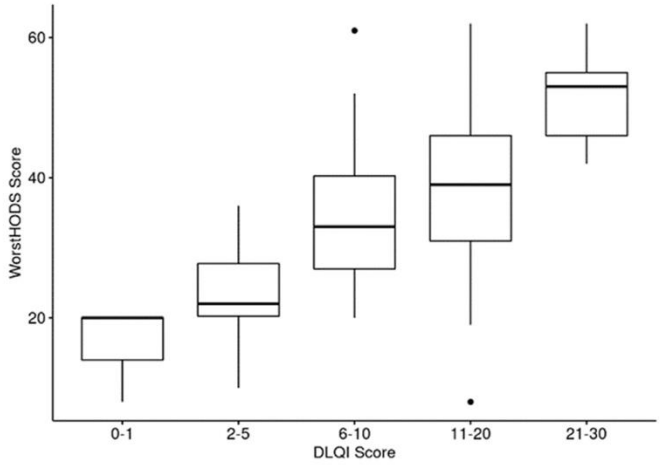
Measuring Exudate & Odor (HODS)

Draining tunnels are an important marker of disease activity in HS and both odor and drainage have a significant impact on a patient's quality of life (Alavi et al, 2023)

Figure 1: The Hidradenitis Drainage & Odor Scale (HODS) was developed to provide a new tool to enable this activity to be tracked. A study demonstrate significant correlation between the HODS score and quality of life (DLQI score)



The HODS questionnaire asks the patient to rate both their ‘usual’ amount of drainage and their ‘worst’ amount over the last week, by body location. There are also a few questions about the level of odor and the impact of both drainage and odor on the patient.

1. In the past 7 days, what was the usual amount of drainage from your hidradenitis suppurativa?	No drainage	Mild drainage*	Moderate drainage**	Severe drainage***	Very severe drainage****
• Head and Neck	1 □	2 □	3 □	4 □	5 □
• Armpits	1 □	2 □	3 □	4 □	5 □
• Trunk	1 □	2 □	3 □	4 □	5 □
• groins	1 □	2 □	3 □	4 □	5 □
• Buttocks	1 □	2 □	3 □	4 □	5 □
• Genital Perianal area	1 □	2 □	3 □	4 □	5 □
• Other area	1 □	2 □	3 □	4 □	5 □
2. In the past 7 days, what was the worst amount of drainage from your hidradenitis suppurativa?	No drainage	Mild drainage*	Moderate drainage**	Severe drainage***	Very severe drainage****
• Head and Neck	1 □	2 □	3 □	4 □	5 □
• Armpits	1 □	2 □	3 □	4 □	5 □
• Trunk	1 □	2 □	3 □	4 □	5 □
• groins	1 □	2 □	3 □	4 □	5 □
• Buttocks	1 □	2 □	3 □	4 □	5 □
• Genital Perianal area	1 □	2 □	3 □	4 □	5 □
• Other area	1 □	2 □	3 □	4 □	5 □
In the past 7 days…	Never	Rarely	Sometimes	Often	Always
1. I felt embarrassed about my drainage…	1 □	2 □	3 □	4 □	5 □
2. The drainage interfered with my sex life…	1 □	2 □	3 □	4 □	5 □
3. How often did the drainage from your Hidradenitis Suppurativa lesions make you select specific clothing?	1 □	2 □	3 □	4 □	5 □

	No odor at all	Slight odor	Moderate odor	Strong odor	Very strong odor
1. In the past 7 day, what was the typical odor that you perceived coming from your hidradenitis suppurativa affected areas?	1 □	2 □	3 □	4 □	5 □
	Never	Rarely	Sometimes	Often	Always
2. In the past 7 days, I felt embarrassed about my odor…	1 □	2 □	3 □	4 □	5 □
3. In the past 7 days, my odor interfered with my sex life	1 □	2 □	3 □	4 □	5 □

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1. In the past 7 days, what was the USUAL amount of drainage from your hidradenitis suppurativa?

					
	No Drainage	**Mild**	**Moderate**	**Severe**	**Very Severe**
Head & Neck	*1* ☐	*2* ☐	*3* ☐	*4* ☐	*5* ☐
Armpits	*1* ☐	*2* ☐	*3* ☐	*4* ☐	*5* ☐
Trunk	*1* ☐	*2* ☐	*3* ☐	*4* ☐	*5* ☐
Groin	*1* ☐	*2* ☐	*3* ☐	*4* ☐	*5* ☐
Buttocks	*1* ☐	*2* ☐	*3* ☐	*4* ☐	*5* ☐
Genital Perianal Area	*1* ☐	*2* ☐	*3* ☐	*4* ☐	*5* ☐
Other Area	*1* ☐	*2* ☐	*3* ☐	*4* ☐	*5* ☐

2. In the past 7 days, what was the WORST amount of drainage from your hidradenitis suppurativa?

					
	No Drainage	**Mild**	**Moderate**	**Severe**	**Very Severe**
Head & Neck	*1* ☐	*2* ☐	*3* ☐	*4* ☐	*5* ☐
Armpits	*1* ☐	*2* ☐	*3* ☐	*4* ☐	*5* ☐
Trunk	*1* ☐	*2* ☐	*3* ☐	*4* ☐	*5* ☐
Groin	*1* ☐	*2* ☐	*3* ☐	*4* ☐	*5* ☐
Buttocks	*1* ☐	*2* ☐	*3* ☐	*4* ☐	*5* ☐
Genital Perianal Area	*1* ☐	*2* ☐	*3* ☐	*4* ☐	*5* ☐
Other Area	*1* ☐	*2* ☐	*3* ☐	*4* ☐	*5* ☐

3. In the past 7 days…

	Never	Rarely	Sometimes	Often	Always
a. I felt embarrassed about my drainage…	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
b. The drainage interfered with my sex life…	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
c. c. How often did the drainage make you select specific clothing…	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

4. In the past 7 days…

	No odor at all	Slight odor	Moderate odor	Strong odor	Very strong odor
a. What was the typical odor that you perceived coming from your hidradenitis suppurativa affected areas?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

	Never	Rarely	Sometimes	Often	Always
b. I felt embarrassed about my odor…	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
c. My odor interfered with my sex life…	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

Measuring Exudate & Odor (HODS)

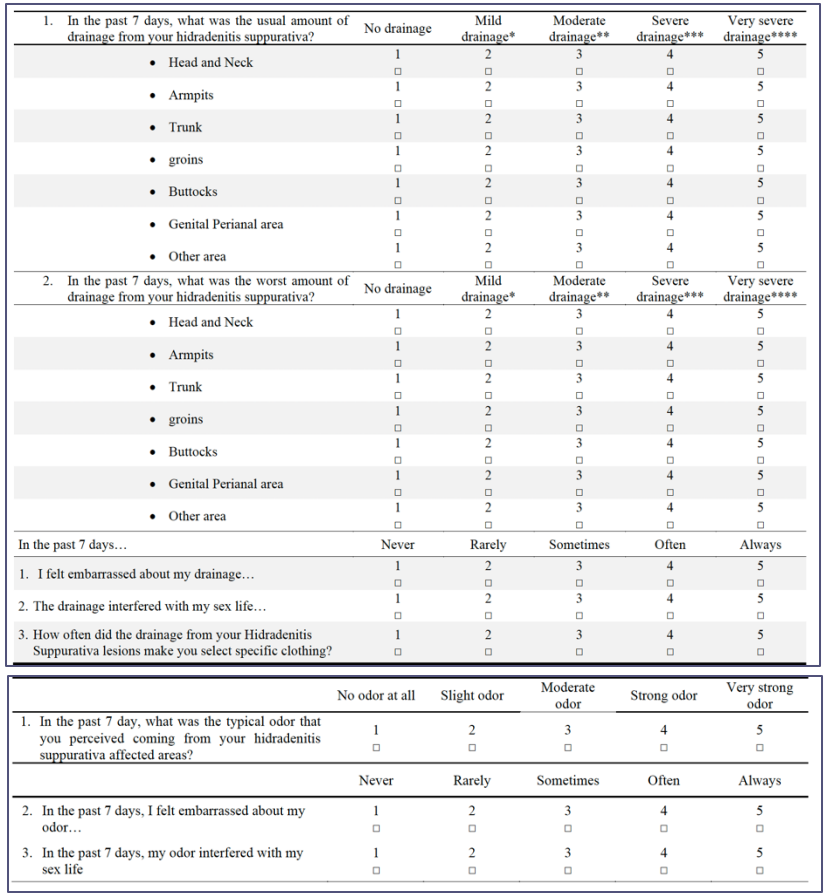
To get a final score, total up the scores of all the answers;

- Four sections with 20 answers in total
- Each worth 5 points max
- Total maximum score = 100

The higher the score, the worse the impact of the drainage and odour on the patient's quality of life.

Actions should then be taken to improve the management of the drainage and odour.

Rerun the questionnaire with each patient regularly to track the impact of treatment.



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2. In the past 7 days, what was the worst amount of drainage from your hidradenitis suppurativa?	No drainage	Mild drainage*	Moderate drainage**	Severe drainage***	Very severe drainage****
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In the past 7 days…	Never	Rarely	Sometimes	Often	Always
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2. The drainage interfered with my sex life…	1 □	2 □	3 □	4 □	5 □
3. How often did the drainage from your Hidradenitis Suppurativa lesions make you select specific clothing?	1 □	2 □	3 □	4 □	5 □

	No odor at all	Slight odor	Moderate odor	Strong odor	Very strong odor
1. In the past 7 day, what was the typical odor that you perceived coming from your hidradenitis suppurativa affected areas?	1 □	2 □	3 □	4 □	5 □
	Never	Rarely	Sometimes	Often	Always
2. In the past 7 days, I felt embarrassed about my odor…	1 □	2 □	3 □	4 □	5 □
3. In the past 7 days, my odor interfered with my sex life	1 □	2 □	3 □	4 □	5 □

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Guidelines for Exudate Management in HS

JAAD – International Panel, 2023 (Exudate Specific)

Statements	Distribution of participants rankings on a 7-point Likert scale		
	1-2 (disagree)	3-5	6-7 (agree)
Moderate to heavily draining wounds require absorptive dressings such as foams, calcium alginate, gelling fibers and superabsorbent dressings to promote healing and prevent staining of clothes	0% (0/24)	8.3% (2/24)	91.7% (19/24)
Woven gauze tends to stick to the wound bed and result in painful dressing change and therefore should be avoided	0% (0/24)	29.2% (3/24)	70.8% (17/24)
Dressings should be kept in place using atraumatic materials	0% (0/24)	20.8% (5/24)	79.2% (19/24)
The frequency of dressing change depends on the dynamic changes in the wound but mostly the amount of drainage and the location of the wound. More exudative wounds will require more frequent changes. Patient preferences (e.g., showering frequency) should be taken into consideration when recommending frequency of dressing changes.	0% (0/24)	12.5% (3/24)	87.5% (19/24)

Also consider factors such as cost, frequency of dressing change, educational resources, evidence base, secondary infection and cleansing.

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Guidelines for Exudate Management in HS

BDNG, 2023

Wound care assessment	Criteria	Challenges	Recommendations
Retention and leak confidence	Manage exudate levels	Exudate and moisture balance play a key role in wound healing but with the wrong amount, it can have a detrimental effect	Select an absorbent wound dressing such as a superabsorber or a foam dressing
	Reduce the risk of maceration or delay in healing	When fluid is trapped against the skin for sustained periods of time, it becomes soft and at risk of damage from the protein-digesting enzymes contained in exudate	
	Dressing retention to keep wound covered in axillae, groin and buttocks	HS lesions frequently expel high volumes of exudate. Frequency and volume are unpredictable, and dressings often become saturated, causing embarrassing leaks. High levels of anxiety and shame are experienced by patients due to leaks and odour. Patients often limit their range of movement due to the risk of dressings peeling away or falling off.	When selecting the tape, bandage or garment, consider what will best retain the dressing in place in the specific location. Tapes and adhesive perform well on flat, smooth areas of the body. Bandages work well when wrapped around a limb or trunk. Body confirming garments work well in difficult to dress areas.

Also consider factors such as dressing difficulty, dressing related pain, comfort, time-consumption, body confidence, quality of life, infection and value-based care. Failure to respond to first-line wound management in 2-4 weeks should lead to referral to a wound care/ tissue viability specialist.

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Conclusion & take aways

- Effective exudate management is essential for wound healing and poorly managed exudate can lead to delayed healing and reduced patient quality of life

- For HS patients, exudate is likely to be especially challenging when there are;
    - Often very high, fluctuating levels of exudate;
    - Exuding from ‘difficult-to-dress’ areas of the body

- The Hidradenitis Drainage & Odor Scale (HODS) is a validated tool that has proven a clear link between the levels of exudate and odour and the quality of life of the patient

- Ensuring patients have effective exudate management can rapidly improve their quality of life and minimise the risks of complications such as maceration and delayed healing

- BDNG Guidelines and others including the JAAD recommend clear actions to effectively manage exudate to ensure that wound healing, quality of surrounding skin and patient quality of life is optimised

Review Questions

1. What is the prevalence of Hidradenitis Suppurativa?
2. Describe the pathophysiology of Hidradenitis Suppurativa?
3. What is Wound Exudate and what is its role?
4. List atleast 3 problems associated with excessive Wound Exudate production?
5. What clinical challenges can Wound Exudate cause?
6. What patient challenges can Wound Exudate cause?
7. Why is Wound Exudate particularly a challenge for patients with Hidradenitis Suppurativa?
8. What scale, specifically designed for HS, can be used to monitor and measure Wound Exudate?
9. Outline 2 key recommendations for managing Wound Exudate in patients with HS?
10. Providing patients with easy to use and effective dressings and dressing retention solutions is key to rapidly improving their what?

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