

# PD Procedures: Exit Site Care

## Exit Site Classification and Assessment



### 1.0 Practice Standard

Exit site and tunnel infections contribute to morbidity, catheter loss, quality of life issues, technique failure and increased costs.

Classifying and assessing exit sites based on appearance and specific characteristics aids in early diagnosis, prevention and effective treatment of exit site infections.

The Registered Nurse and the Licensed Practical Nurse who is trained and has demonstrated competency in Peritoneal Dialysis Procedures will assess all exit sites with each dressing change.

Two methods for classifying and assessing exit sites are outlined in this document.

- A. Exit site classification system: originated from the work by Zyblut Twardowski and Barbara Prowant. This classification system is based on the appearance of the exit site and assists in the identification of exit site healing and early infection.
- B. Exit site scoring system: numerical scoring system outlined in the 2005 ISPD guidelines for Peritoneal Dialysis related Infections. Originally developed by pediatricians but not critically examined in adults.

### 2.0 Definitions and Abbreviations

**Crust:** pale or dark yellow hardened drainage (serum with white blood cells) may be combined with cuticle.

**Cuticle:** layer of dead or cornified epidermis

**Epithelium:** tissue that lines the surfaces and cavities of the body. Fragile, pale pink, white, wrinkles on pressure.

**Erythema:** red or bright pink colour >13 mm from border to border including the width of the catheter. Light pale pink or purplish discolouration at the exit site is not considered erythema.

**Exit site:** point at which the PD catheter exits the body which includes the most external part of the sinus tract and the surrounding skin.

**External exit:** visible exit site (outside of the sinus rim) which can be seen without lifting the catheter.

**Granulation tissue:** flat, firm, dull, mottled or pink, typically no vessels visible

**Proud flesh:** bulging granulation tissue, shiny, numerous vessels visible, fragile, easily bleeding, frequently covered by scab or crust

**Scab:** hardened serum and blood (evidence of bleeding)

**Slightly exuberant granulation tissue:** slightly protruding, delicate, some vessels visible, frequently covered by difficult to detach scab or crust.

**Tunnel:** area created by the catheter position under the skin between the exit site and the point of entry into the peritoneal cavity. Located between the internal and external cuffs

**Visible sinus:** outermost part of the sinus tract (inside the sinus rim) which is visible after lifting the catheter or moving it laterally.

### 3.0 Classification/Assessment Process

Evaluation of the exit site involves:

1. Visual inspection of both the external exit site and sinus tract. The external exit site can be seen without lifting the catheter. To view the outermost part of the sinus one must gently lift or move the catheter laterally. Sometimes it helps to have a lighted magnifier.
2. Palpation of the tunnel and cuff for induration and tenderness.
3. Obtaining history from the patient or family. Have exit site practices been altered lately? When was the dressing last changed? Ideally the exit site should be cleansed at least 12 hours before assessment and culture.
4. Culturing any obvious drainage. Tug and squeeze along tunnel and exit site if any doubt.
5. Comparing findings with previous exit site appearance.
6. Using the exit site classification guide to document findings.

#### A. Classification system by Dr. Z. Twadowski and B. Prowant

PERFECT EXIT SITE		
SIGN/SYMPTOM	LOCATION	ASSESSMENT
Pain/Tenderness		None
Color		Natural, pale pink or dark
Scab		None
Drainage	External	None
	Sinus	None or barely visible, clear or thick
Granulation Tissue	External	None
	Sinus	None
Swelling		None
Epithelium		Strong, mature, covers visible sinus
Absent Findings		Pain, swelling, pink or red color around the exit site, any external drainage, purulent or bloody drainage in the sinus, granulation tissue

**Epithelium** - wrinkles on pressure, pale pink or white. The sinus tract is rarely completely epithelialized. Growth of epidermis in the sinus usually stops between 3mm to 7mm downward from the exit site. Beyond this there is a foreign body reaction to the Dacron cuff. The inflammatory reaction to any invading organism starts in the sinus so early signs of infection will be more obvious in the visible sinus.

<b>GOOD EXIT SITE</b>		
<b>SIGN/SYMPTOM</b>	<b>LOCATION</b>	<b>ASSESSMENT</b>
Pain/Tenderness		None
Color		Natural, pale pink, purplish or dark bright pink < 13mm
Crust		None
Drainage	External	None
	Sinus	None or barely visible, clear or thick
Granulation Tissue	External	None
	Sinus	None or barely visible, clear or thick
Swelling		None
Epithelium		Strong, mature at sinus rim, fragile or mucosal deeper
Absent Findings		Pain, swelling, redness (any diameter, any external drainage, purulent and or bloody drainage in the sinus, exuberant granulation tissue

**Plain granulation tissue** - flat, firm, mottled or pink, typically to vessels visible

<b>EQUIVOCAL EXIT SITE</b>		
<b>SIGN/SYMPTOM</b>	<b>LOCATION</b>	<b>ASSESSMENT</b>
Pain/Tenderness		None
Color		Bright pink < 13mm
Crust		Present, may be large and difficult to detach
Scab		None
Drainage	External	None even with pressure on sinus. Dried exudate on dressing.
	Sinus	Purulent or bloody, may be serous in nature
Granulation Tissue	External	Plain or slightly exuberant
	Sinus	Slightly exuberant
Swelling		None
Epithelium		Absent or covers part of the sinus
Absent Findings		Pain, redness with diameter > 13 mm, Swelling

**Erythema** - purplish discoloration or light pale pink discoloration is not considered erythema, red or pink color < 13mm is not considered erythema either

**Crust** - Pale or dark yellow hardened drainage (serum with WBC may be combined with cuticle (a layer of dead epidermis)

**Slightly exuberant granulation tissue** - delicate, some vessels visible, slightly protruding, frequently covered by difficult to detach scab or crust

### Care of the Equivocal Exit Site:

1. Obtain a gram stain, culture and sensitivities of the exudate.
2. Initiate topical antibiotics based on culture results.
3. Cauterise with silver nitrate if necessary.
4. Use systemic antibiotics if no improvement seen within 2 weeks.
5. Continue antibiotic therapy 7 days past achieving a good appearance.
6. Increase frequency of exit site cleansing to 1-2 times daily.
7. Avoid strong cleansing oxidants.
8. Cover with sterile absorbent dressing.

ACUTE EXIT SITE INFECTION (4 WEEKS DURATION)		
SIGN/SYMPTOM	LOCATION	ASSESSMENT
Pain/Tenderness		May be present
Color		Bright pink < 15mm
Crust		Present
Scab		May be present
Drainage	External	Purulent or bloody, wet exudate on dressing
	Sinus	Purulent or bloody
Granulation Tissue	External	Slightly exuberant
	Sinus	Slightly exuberant
Swelling		May be present
Epithelium		Absent or covers part of the sinus

**Scab** - Hardened serum and blood (evidence of bleeding)

**Erythema** - >15mm (twice the size of the catheter)

### Care of the Acute Catheter Exit Site Infection:

1. Obtain Gram stain, culture, and sensitivities of the exudate.
2. Use systematic antibiotics according to C&S results.
3. Evaluate weekly and reculture if improvement is not seen. Antibiotics may need to be changed.
4. Treat for 7 days after a good exit site is achieved.
5. Cleanse exit site with a non-ionic surfactant 1-2 times per day depending on the amount of drainage.
6. Do not forcibly remove crusts.
7. Cauterise proud flesh with silver nitrate.

## CHRONIC EXIT SITE INFECTION (>4 WEEKS DURATION)

SIGN/SYMPTOM	LOCATION	ASSESSMENT
Pain/Tenderness		Rare but may be present over the cuff
Color		Natural, pale pink, purplish or dark, bright pink < 13 mm
Crust		Present
Scab		May be present and difficult to detach
Drainage	External	Purulent or bloody, wet exudate on dressing
	Sinus	Purulent or bloody
Granulation Tissue	External	Proud flesh typically visible
	Sinus	Proud flesh
Swelling		Rare but may be present
Epithelium		Absent or covers part of the sinus
Absent Findings		Pain, swelling and erythema rarely seen. If present may indicate exacerbation of infection.

**Proud flesh-** Bulging granulation tissue, shiny, numerous vessels visible, fragile, bleeds easily, frequently not covered by a scab.

### Care of the Chronic Exit Site Infection:

1. Obtain Gram stain, culture and sensitivities of the exudate.
2. Use systemic antibiotics according to the sensitivities.
3. Add a synergistic antibiotic if there is no improvement within 1 week.
4. Use long term antibiotic treatment as needed.
5. Evaluate every 2 weeks and reculture if there is no improvement seen or switch to topical antibiotics if warranted when exit site moves into equivocal category
6. Cauterise proud flesh weekly if needed
7. With a non-toxic cleanser such as Constant Clens or Normal Saline Cleanse the exit site 1-2 times per day depending on the amount of drainage.
8. Cover exit site with a sterile absorbent dressing.
9. Do not remove crusts forcibly.

<b>TRAUMATIZED EXIT SITE</b>		
<b>SIGN/SYMP TOM</b>	<b>LOCATION</b>	<b>ASSESSMENT</b>
Pain/Tenderness		Severity depends on the intensity of the trauma at exit or cuff
Color		Depending on the severity of the injury
Crust		May be present
Scab		Present
Drainage		Within 48 hours trauma may lead to infection, and drainage
Granulation Tissue		Deterioration of previous exit site appearance, (plain or slightly exuberant)
Swelling		May be present
Epithelium		Change from previous but may recede

### Care of the Traumatized Exit Site:

1. Start systemic antibiotics prophylactically for at least a week. Colonised bacteria rapidly multiply in the presence of decomposing blood. An infection may occur within 24-48 hours after trauma.
2. Use a broad-spectrum antibiotic if skin sensitivities are not known. Continue antibiotic therapy until 7 days after achieving a good appearance.
3. Gentle handling and immobilisation of the catheter.

### Preventing Trauma at the Exit Site:

1. Avoid pulling or excessive tension of the catheter.
2. Anchor catheter in a natural position.
3. Avoid irritation from belts, clothing or seat belts.
4. Avoid scratching or picking at exit site.
5. Do not forcibly remove scabs or crusts.
6. Do not sleep on abdomen.

## B. Exit Site Scoring System: 2012 ISPD Guidelines/Recommendations

- Numerical exit site scoring system specifically developed for the pediatric PD population.

	0 POINTS	1 POINT	2 POINTS
Swelling	No	Exit only; <0.5 cm	>0.5 and/or tunnel
Crust	No	<0.5 cm	>0.5 cm
Redness	No	<0.5 cm	>0.5 cm
Pain	No	Slight	Severe
Drainage	No	Serous	Purulent

Infection should be assumed with an exit site score of 4 or greater. Purulent drainage, even if alone, is sufficient to indicate infection. A score of less than 4 may not represent infection.

### 4.0 Documentation Considerations

Document assessment findings following each dressing change.

Consider documenting the appearance of the exit site on the patient's record by referencing the face of a clock to identify locations of scabs, crusts, redness, swelling etc.

- 12 o'clock position of the exit site is towards the patients head
- 6 o'clock position is towards the patients feet

For example:

- Large, difficult to remove crust noted between 6 and 9 o'clock position.
- Scab apparent between 11 and 1 o'clock position.
- Taking a picture of the exit site aids in the assessment, classification and re evaluation of the exit site. A signed consent needs to be on the chart for picture inclusion.

### 5.0 Special Considerations: Interventional Guidelines

(does not replace individualized care and clinical expertise)

- A positive culture in the absence of an abnormal appearance is indicative of colonization rather than infection. Exit sites are commonly colonized by the third week post insertion. Swabs for C&S should be obtained if obvious drainage is apparent
- Pericatheter erythema without purulent drainage is sometimes an early indication of infection but can also be a simple skin reaction, particularly in a recently placed catheter or after trauma to the catheter/exit site. Exit sites may appear inflamed due to allergies or irritation from cleansing solutions, antibacterial ointments, laundry detergents, clothing etc. A complete history is necessary when assessing an exit site to assist in differentiating between inflammation and possible infection.
- An exit site that is assessed as well healed (perfect or good) should remain that way

unless exposed to gross contamination or trauma.

- Trauma to the exit site is a precursor to potential exit site infection.

## 6.0 References

Baxter Peritoneal Dialysis Catheter Exit Site Classification Guide

Gokal, R et al peritoneal catheters and Exit – Site Practices toward Optimum Peritoneal Access 1998 Update Peritoneal dialysis International 1998;18 (No 1):11-33

Khanna, R. Recommendations for Treatment of Exit – Site Pathology, Peritoneal Dialysis International 1996 Volume 16, (supplement3): S100-S104

Piraino B, Bailie G, Bernardini J, et al. Peritoneal Dialysis Related Infections Recommendations: 2005 update. Peritoneal Dialysis International 2005;Vol 25, pp 107 -131.

Prowant, B., Ponferrada, L. & Stalowich, R. (2008) Peritoneal Dialysis. In Counts, C. (Ed.) Core Curriculum for Nephrology Nursing, Fifth Edition, (pp.765-851). Pitman, NJ: American Nephrology Nurses Association.

Prowant, B., Twardowski, Z., Recommendations for Exit Care, Peritoneal Dialysis International 1996 Volume 16 Supplement 3: S94-99

Prowant, B., Nursing Intervention Related to Catheter Exit Site Infections. Advances in Renal Replacement Therapy 1996; (No3) 228-231

Twardowski, Z., Prowant, B., Classification of Normal and Diseased Exit Sites, Peritoneal dialysis International 1996 16 (Suppl 3) S32-36

Twardowski, Z., Prowant, B., Exit Site Study Methods and Results, Peritoneal Dialysis International 1996:16 (Suppl 3) S6-26

Twardowski, Z., Prowant, B., Exit Site Healing Post Catheter Implantation, PDI 1996: S16 (Suppl 3) S51-70

Twardowski, Z., Prowant, B., Appearance and Classification of Healing Catheter Peritoneal Catheter Exit Sites PDI 1996 16 (Suppl 3) S71- 76

Twardowski, Z., Exit Site Care in Peritoneal Dialysis Patients, PDI 1994: Vol. 14 (Suppl 3) S39-42)

Vancouver Coastal Health. (2012). Patient Care Guidelines. Peritoneal Dialysis: Exit Site Evaluation and Treatment of Infections. PCG P-23.

Warady, B et al. Consensus guidelines for the prevention and treatment of catheter related infections and peritonitis in pediatric patients receiving peritoneal dialysis: 2012 update; PDI 2012; 32:S29-S86.

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