

Peritoneal Dialysis: Exit Site Evaluation and Treatment of Infections

Site Applicability

VCH

Practice Level

RN with additional education and training in peritoneal dialysis.

Background Information

This exit site classification system adapted by Baxter from the work by Zyblut Twardowski and Barbara Prowant classifies the exit site based on appearance. It is effective in detecting early signs of infection.

Problem Statement

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

Goal


Classifying exit site based on appearance into several categories Perfect, Good, Equivocal, Acute Infection, Chronic Infection and Traumatized Exit with guidelines for the treatment of each category aids in early diagnosis, prevention and effective treatment of exit site infections.

PROCEDURE / RECOMMENDATIONS / ASSESSMENT:

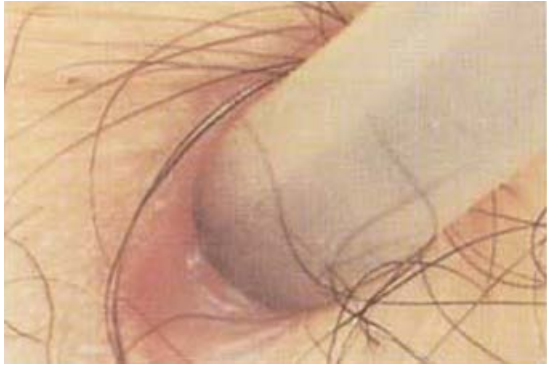
Positive cultures of exit sites not inflamed indicate colonisation not infection: Exit sites are commonly colonised by the third week post insertion. Evaluation of the exit site involves:

1. Visual inspection of the external exit site and sinus. 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 exit site classification guide document findings in PROMIS and exit site classification worksheet.

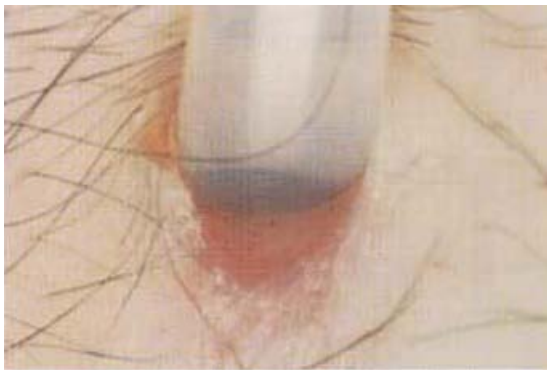
NOTE: This is a controlled document. A printed copy may not reflect the current, electronic version on the VCH Intranet. Any documents appearing in paper form should always be checked against the electronic version prior to use. The electronic version is always the current version. This CPD has been prepared as a guide to assist and support practice for staff working at Vancouver Acute. It is not a substitute for proper training, experience and the exercise of professional judgment. Please do not distribute this document outside of VCHA without the approval of the VCH Office of Professional Practice.

Perfect Exit Site:		
Pain/Tenderness		None
Color		Natural, pale pink or dark
Scab		None
Drainage	External Sinus	None None or barely visible, clear or thick
Granulation Tissue	External Sinus	None 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.

Good Exit:		
Pain/Tenderness		None
Color		Natural, pale pink, purplish or dark bright pink < 13mm
Scab		None
Drainage	External Sinus	None None or barely visible, clear or thick
Granulation Tissue	External Sinus	None 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

Equivocal:		
Pain/Tenderness		None
Color		Bright pink < 13mm
Crust		Present, may be large and difficult to detach
Scab		None
Drainage	External Sinus	None even with pressure on sinus, dried exudate on dressing Purulent or bloody, may be serous in nature
Granulation Tissue	External Sinus	Plain or slightly exuberant 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

NOTE: This is a controlled document. A printed copy may not reflect the current, electronic version on the VCH Intranet. Any documents appearing in paper form should always be checked against the electronic version prior to use. The electronic version is always the current version. This CPD has been prepared as a guide to assist and support practice for staff working at Vancouver Acute. It is not a substitute for proper training, experience and the exercise of professional judgment. Please do not distribute this document outside of VCHA without the approval of the VCH Office of Professional Practice.

Acute Infection (4 weeks duration):		
Pain/Tenderness		May be present
Color		Bright pink < 15mm
Crust		Present
Scab		May be present
Drainage	External Sinus	Purulent or bloody, wet exudate on dressing Purulent or bloody
Granulation Tissue	External Sinus	Slightly exuberant 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

NOTE: This is a controlled document. A printed copy may not reflect the current, electronic version on the VCH Intranet. Any documents appearing in paper form should always be checked against the electronic version prior to use. The electronic version is always the current version. This CPD has been prepared as a guide to assist and support practice for staff working at Vancouver Acute. It is not a substitute for proper training, experience and the exercise of professional judgment. Please do not distribute this document outside of VCHA without the approval of the VCH Office of Professional Practice.

Chronic Infection (> 4 weeks duration):		
Pain/Tenderness		Rare but may be present over the cuff
Color		Natural, pale pink, purplish or dark, bright pink < 13mm
Crust		May be present and difficult to detach
Scab		May be present
Drainage	External Sinus	Purulent or bloody, wet exudate on dressing Purulent or bloody
Granulation Tissue	External	Proud flesh typically visible 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.

NOTE: This is a controlled document. A printed copy may not reflect the current, electronic version on the VCH Intranet. Any documents appearing in paper form should always be checked against the electronic version prior to use. The electronic version is always the current version. This CPD has been prepared as a guide to assist and support practice for staff working at Vancouver Acute. It is not a substitute for proper training, experience and the exercise of professional judgment. Please do not distribute this document outside of VCHA without the approval of the VCH Office of Professional Practice.

Traumatised Exit:		
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
Swelling		May be present
Epithelium		Change from previous but may recede

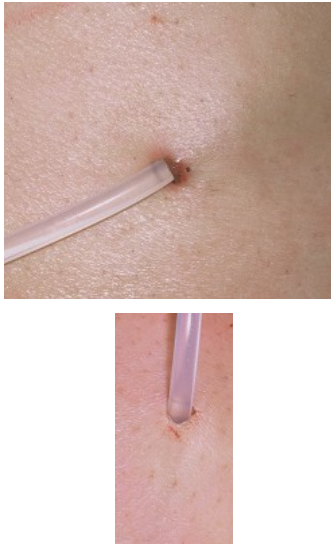
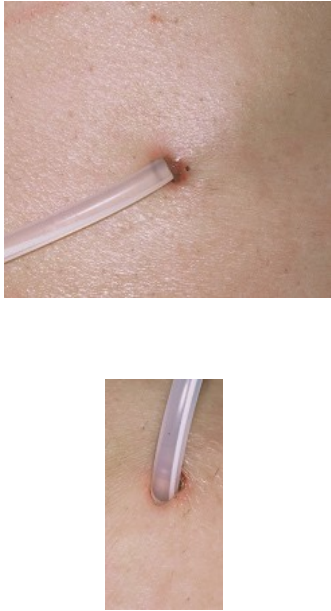

Care of the Traumatised Exit Site:

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.


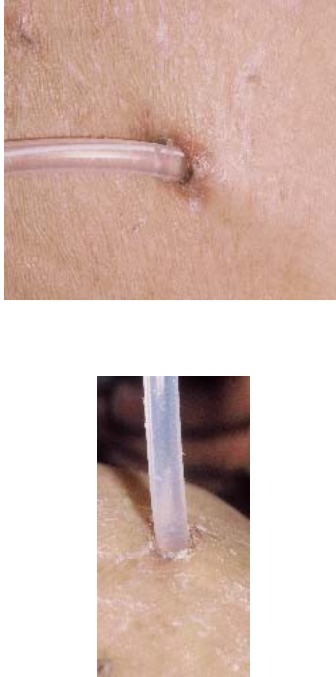
Preventing Trauma at the Exit Site:

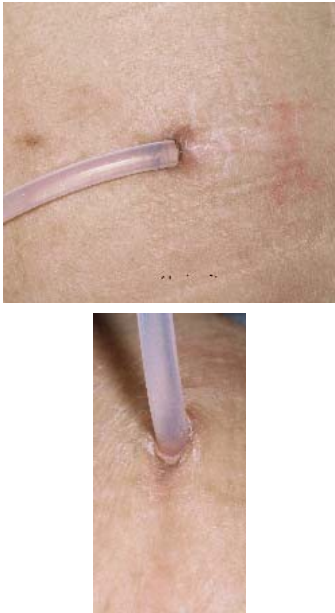


4. Avoid pulling or excessive tension of the catheter
5. Anchor catheter in a natural position
6. Avoid irritation from belts, clothing or seat belts
7. Avoid scratching or picking at exit site
8. Do not forcibly remove scabs or crusts
9. Do not sleep on abdomen

Optimal Healing Exit Site Findings:


<ul style="list-style-type: none"> • Day of Catheter Insertion <ul style="list-style-type: none"> ○ Slight tenderness ○ Bloody drainage ○ No scab ○ No visible sinus ○ Epidermis natural or slightly bruised ○ Catheter fits tightly 	
<ul style="list-style-type: none"> • First week Post Catheter Insertion <ul style="list-style-type: none"> ○ Slight tenderness ○ Scab • Epidermis around the exit is pale or pink <ul style="list-style-type: none"> ○ Small amount of serosanguinous, bloody, or serous drainage may be present around the exit site ○ Drainage inside the sinus is present and is similar to exit site drainage ○ Swelling subsides by the end of the first week 	
<ul style="list-style-type: none"> • 2nd week Post Catheter Insertion <ul style="list-style-type: none"> ○ Epithelium absent in the sinus but starting to enter 	

NOTE: This is a controlled document. A printed copy may not reflect the current, electronic version on the VCH Intranet. Any documents appearing in paper form should always be checked against the electronic version prior to use. The electronic version is always the current version. This CPD has been prepared as a guide to assist and support practice for staff working at Vancouver Acute. It is not a substitute for proper training, experience and the exercise of professional judgment. Please do not distribute this document outside of VCHA without the approval of the VCH Office of Professional Practice.

<ul style="list-style-type: none"> ○ Drainage is reduced ○ Epidermis changes from pale pink to pinkish white 	
<ul style="list-style-type: none"> ● 3rd week Post Catheter Insertion <ul style="list-style-type: none"> ○ Drainage absent at exit site and diminishing in the sinus ○ Scab size diminishing ○ Epidermis pale pink of pink ○ Sinus color pinkish white ○ Epithelium progressing in the sinus 	

<ul style="list-style-type: none"> • 4th week Post Catheter Insertion <ul style="list-style-type: none"> ○ Drainage in sinus diminishing ○ Scab absent ○ Epidermis pale pink or pink ○ Sinus color pale pink or pink ○ Sinus color pinkish white ○ Epithelium progressing in the sinus 	
<ul style="list-style-type: none"> • 5th week Post Catheter Insertion <ul style="list-style-type: none"> ○ Epidermis pale pink or pink ○ Sinus color pinkish white ○ Epithelium covering half of the sinus 	
<ul style="list-style-type: none"> • 6th week Post Catheter Insertion <ul style="list-style-type: none"> ○ Drainage at sinus absent ○ Epidermis pale pink or pink 	

NOTE: This is a controlled document. A printed copy may not reflect the current, electronic version on the VCH Intranet. Any documents appearing in paper form should always be checked against the electronic version prior to use. The electronic version is always the current version. This CPD has been prepared as a guide to assist and support practice for staff working at Vancouver Acute. It is not a substitute for proper training, experience and the exercise of professional judgment. Please do not distribute this document outside of VCHA without the approval of the VCH Office of Professional Practice.

<ul style="list-style-type: none"> ○ Sinus color pinkish white 	
---	---

Documentation:

As per VGH protocol, [Exit Site Classification Work sheet](#).

ASSOCIATED GUIDELINES / FORMS / EDUCATIONAL MATERIAL:

References

<http://ispd.org/lang-en/treatmentguidelines/guidelines>

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 (No1):11-33

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

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

NOTE: This is a controlled document. A printed copy may not reflect the current, electronic version on the VCH Intranet. Any documents appearing in paper form should always be checked against the electronic version prior to use. The electronic version is always the current version. This CPD has been prepared as a guide to assist and support practice for staff working at Vancouver Acute. It is not a substitute for proper training, experience and the exercise of professional judgment. Please do not distribute this document outside of VCHA without the approval of the VCH Office of Professional Practice.

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)

UNIT(s) OF ORIGIN: Peritoneal Dialysis Unit

Approved for Posting

Director Professional Practice Nursing, Vancouver

Date of Revision

Original publication date: May 2005

Review / revision date(s): Dec/2012 (minor change)

Alternate Search Terms

PDU

Exit Site Classification Worksheet

Name: _____

Date: _____

External Evaluation

Pain/Tenderness

____ Present
____ Absent

Skin Colour

____ Natural
____ Pale pink
____ Purplish or dark
____ Erythema
____ Pink
____ Red
____ mm measurement
from border to border

Crust

____ None
____ Small
____ Large
____ Easy to remove
____ Difficult to detach

Scab

____ Present
____ Absent

Granulation Tissue

____ Absent
____ Slightly exuberant
____ "Proud flesh"

Drainage

____ None
____ Dried exudate on dressing
____ Serous (clear)
____ Purulent
____ Bloody

Swelling

____ Present
____ Absent

Sinus Evaluation

Drainage (Sinus)

____ Absent
____ Serous (clear)
____ Purulent
____ Bloody

Granulation Tissue (Sinus)

____ Absent
____ Plain beyond epithelium
____ Slightly exuberant
____ Proud flesh

Epithelium

____ Strong, mature, covers
visible sinus
____ Covers part of sinus
____ Absent

Trauma

Recent Trauma

____ Yes
____ No

Indications often seen with Trauma: Pain, bleeding, scab, deterioration of exit appearance. Exit appearance will depend on intensity of trauma and length of time before evaluation

Classification

Perfect

Good

Equivocal

Acute Inf.

Chronic Inf.

Post Trauma

Cuff Inf.

Comments:

Classified by:

Renal Division

Baxter

Adapted in part from: Twardowski, ZJ, and Prowant, BF. Classification of normal and diseased exit sites. *Perit Dial Int*, 1996; 16, Supp 3. Reprinted with Permission Multimed Inc.

5K9847