The Absorptive Abilities of a CHG Gel Dressing: Can Initial Gauze Dressings be Avoided?

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Abstract

Objective: To determine the absorption abilities of a CHG gel dressing.

Background:
The Society of Health Care Epidemiology of America Guidelines (2008), the Infusion Nursing Society's Standards of Practice (2006), and the Center for Disease Control Guidelines for the prevention of intravascular catheter-related infections (2002) recommend that gauze dressings be used if the patient is diaphoretic, or if the insertion site is bleeding or oozing. However gauze dressings need to be changed at least every two days, and they prevent the visual inspection of the insertion site. Many hospital protocols require that gauze be used for the first 24-48 hours after new catheter insertions. Current Transparent Semi-permeable Membrane (TSM) dressings may be left on for 7 days but lack the ability to absorb fluid. Recently a TSM with a transparent absorbent chlorhexidine gluconate (CHG) gel has become available. Our facility conducted an evaluation and one of the objectives was to determine if the initial gauze under the TSM dressing, and its 48 hour dressing change to a TSM, could be eliminated from our protocol.

Methods:
The absorbent CHG TSM was the only dressing used by our vascular access team for 12 days. Each dressing was followed until the dressing needed to be changed, the line was discontinued, the patient expired, or seven days post application. Criteria for changing the dressing were if visualization of the insertion site was obscured by blood, the gel had become saturated, or blood had leaked outside of the gel. Observations were captured on an evaluation form.

Results:
Seventy-three patients with central or peripherally inserted central catheter (PICC) lines were enrolled. Twenty-four were initial PICC insertions and 49 were existing central and PICC lines. Of the 24 new insertions 9 (37%) dressings lasted the full 7 days, 6 (25%) lasted more than 48 hours and until the line was discontinued, 8 (33%) required a dressing change before 48 hours. One patient (4%) expired before the first assessment. Of the 49 existing lines 4 dressings had to be changed due to bleeding.

Conclusions:
The CHG gel TSM could not completely replace the need for gauze dressings following new insertions without requiring some redressing in a subset of patients.
The use of CHG gel TSM was able to replace the initial gauze dressing, as the only dressing needed, on the majority of patients in the small population studied.
A larger study needs to be conducted to better determine how frequently the absorbent CHG gel TSM will require replacement and the cost effectiveness in replacing the routine use of gauze after initial insertions.

Evaluation Periods

The evaluation was conducted over two periods of time. The first period was conducted in the fall of 2008 and included the 73 patients reported in the abstract. The evaluation was continued to include a total of 182 patients and the combined findings are reported in this poster.

Purpose

Recently a transparent semi-permeable membrane dressing (TSM) with a transparent absorbent chlorhexidine gluconate (CHG) gel has become available. Rather than rely upon the empirical 'trial and error' method reported by others, our facility conducted an evaluation of the new dressing with one of the objectives to determine if the initial gauze dressing, and its subsequent dressing change to a TSM, could be eliminated from our protocol. Data was collected uniformly on an evaluation form and analyzed.

Background

Health care professionals caring for catheter insertion sites benefit from guidance offered by a number of national organizations but must often expand on this guidance through their own experience. Such is the case with the choice of dressing following the initial catheter insertion. The Center for Disease Control Guidelines for the prevention of intravascular catheter-related infections (2002) indicate that the choice of a gauze or transparent semi-permeable membrane (TSM) dressing is a matter of preference.

Guidelines recommend that gauze dressings be used if the patient is diaphoretic, or if the insertion site is bleeding or oozing. Many hospital practice protocols have interpreted this guidance to mean that for the first 24 to 48 hours following the initial insertion, when there is a higher likelihood of bleeding, gauze dressings need be used. However gauze dressings need to be changed at least every two days, and they prevent the visual inspection of the insertion site. There has been a great deal of discussion amongst IV professionals, such as on IV-Therapy.net, about the ability to successfully eliminate the initial gauze dressing. Practices are evolving and there appears to a movement across the country to move away from the initial gauze dressing and keeping the initial TSM dressing on 7 days or until soiled. It is considered by many that the first dressing that the patient gets, when the line is being placed under controlled sterile conditions, is the best dressing for the patient (IV-Therapy.net).

Methodology

The absorbent CHG TSM dressing (3M™ Tegaderm™ CHG Chlorhexidine Gluconate IV Securement Dressing) was used by our vascular access team for new and existing insertions for two weeks last fall (Period 1) and 4 weeks in January- February 2009 (Period 2). ChloraPrep™ was used prior to insertion and complete drying of the prep was assured prior to the dressing application. Each dressing was followed until the dressing needed to be changed, the line was discontinued, or seven days post application. In Period 1 the dressings were only followed until the first dressing change. In Period 2 the dressings were followed for up to three weeks if the patient was still under our care.

The criteria for changing the dressing were if visualization of the insertion site was obscured by blood, the gel had become saturated, the catheter needed to be manipulated, or blood had leaked outside of the gel pad. The gel pad was considered to have absorbed too much fluid if the gel failed to bounce back after slight pressure was applied on it with a finger tip. The dressing did not need to be changed if there was only some blood absorbed within the gel but the insertion site could still be visualized. Dressings were assessed daily by the nurse caring for the patient and observations were captured uniformly on an evaluation form.

Criteria For Dressing Changes:
- Visualization of the insertion site obscured by blood
- Gel pad become saturated
  (gel pad failed to rebound after application of light pressure)
- Blood had leaked outside of the gel pad
- Marked lifting of the edges of the dressing
- Catheter needed to be manipulated: E.g. PICC pulled back after insertion to get tip in SVC.

Following the initial evaluation the data collection form was slightly modified and improved upon to be more efficient in its capture of information.

Tegaderm CHG Dressing Evaluation Dressing changes

Patient	Dressing change required at: Check all times dressing changed per patient. < or = 24 hours	48 hours	< 7 days	7 days
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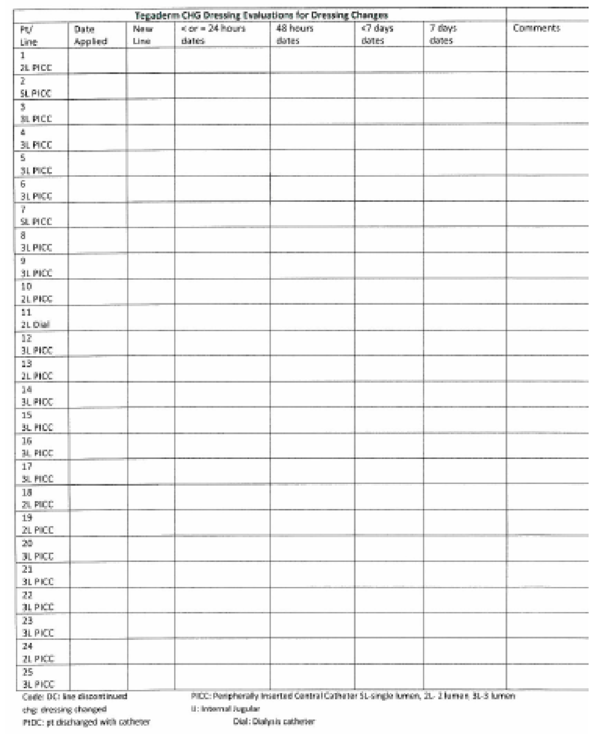

Tegaderm CHG Dressing Evaluations for Dressing Changes

Pt/Line	Date Applied	New Line	< or = 24 hours dates	48 hours dates	<7 days dates	7 days dates	Comments
1 2L PICC							
2 SL PICC							
3 3L PICC							
4 3L PICC							
5 3L PICC							
6 3L PICC							
7 SL PICC							
8 3L PICC							
9 3L PICC							
10 2L PICC							
11 2L Dial							
12 3L PICC							
13 2L PICC							
14 3L PICC							
15 3L PICC							
16 3L PICC							
17 3L PICC							
18 2L PICC							
19 2L PICC							
20 3L PICC							
21 3L PICC							
22 3L PICC							
23 3L PICC							
24 2L PICC							
25 3L PICC							

Code: DC: line discontinued; chg: dressing changed; PtDC: pt discharged with catheter
PICC: Peripherally Inserted Central Catheter SL-single lumen, 2L- 2 lumen 3L-3 lumen; IJ: Internal Jugular; Dial: Dialysis catheter

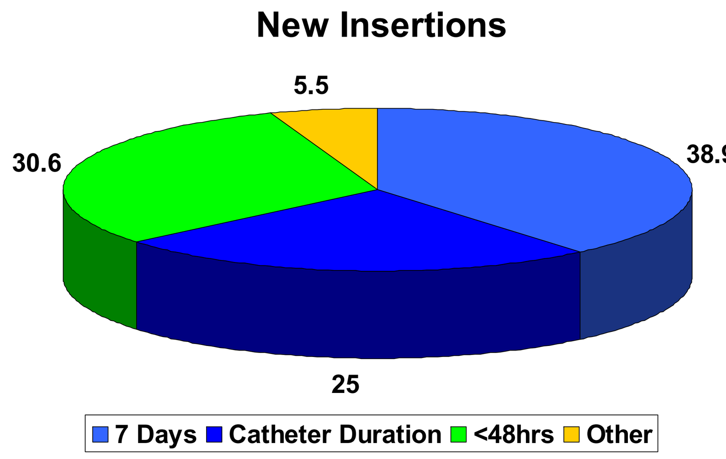
The new dressing was also rated by the staff on its Overall Adherence and Wear Time, and its Ability to Absorb Fluids. A five-point scale was used *(Much worse, Worse, Same As, Better, Much Better)* in comparison to our current TSM.

Results

Two patients complained of itching, but no skin irritation was observed nor device-related adverse events reported.

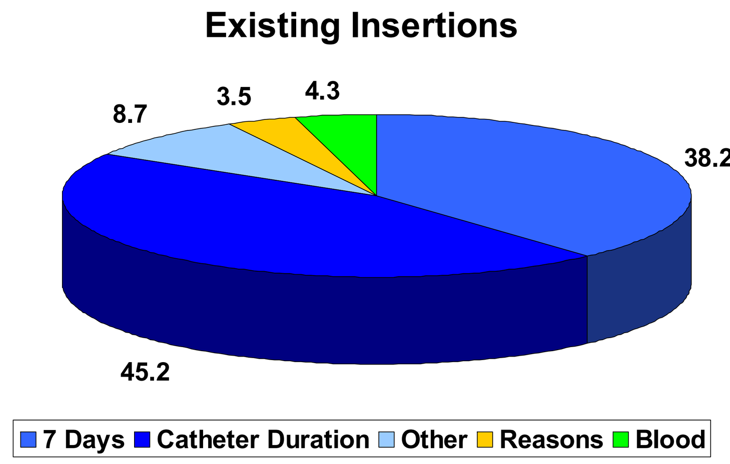
Dressing Changes (Combined Data: Part 1; Aug-Sept 08 & Part 2; Jan-Feb 09)

182	Patients		
10	Data not captured		
172	Patients with Data		
36	New Insertions % of New		
	14	Lasted 7 days	38.9 %
	9	Lasted > 48Hr until line discontinued	25.0 %
	11	Needed dressing change ≤ 48 hours	30.6 %
	2	Dressing Changed for other Reasons 1 Line pulled back 1 Catheter kinked	5.5 %



Results (continued)

136	Existing Insertions		
	115	PICCs	% of PICCs
	44	Lasted 7 days	38.2 %
	52	Lasted > 48Hr until line discontinued	45.2 %
	10	Line discontinued a ≤ 48 hours	8.7 %
	5	Needed dressing change due to blood 4 ≤ 48 hours 1 on third day	4.3 %
	4	Dressing Changed for other Reasons 2 Itch 2 Dressing Not Intact	3.5 %
	21	Non PICCS 15 IJ 1 Midline 5 Subclavian	



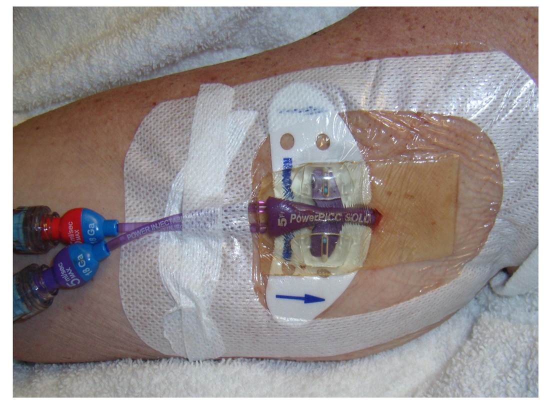
In comparison to our standard TSM the gel dressing was rated as *Better or Much Better* by 68.7% of the staff for Overall Adherence and Wear Time and 82.5% *Better or Much Better* for its Ability to Absorb Fluids.

Discussion

Many hospital protocols require that gauze be used universally for the first 24-48 hours after new catheter insertions due to the higher likelihood of bleeding. If the initial gauze dressing could be eliminated savings in nursing time, costs, and patient comfort could be realized. Le Corre et al (2003) found that they could save significant labor time and money using TSM instead of gauze dressings. Rasero et al (2000) evaluated patient skin trauma, as well as labor and costs with dressing change frequencies of 2, 5, and 10 days. The more frequent changes were not only more costly but also resulted in significantly greater skin irritation due to adhesive skin stripping trauma. Transparent semi-permeable membrane dressings may be left on for 7 days; however, standard TSMs have no ability to absorb blood or exudate.

Recently a TSM with a transparent absorbent chlorhexidine gluconate (CHG) gel has become available. The gel pad can absorb up to a large volume of fluid, but the rate of absorption is much slower than that of gauze and the pad will not keep up with rapid bleeding. We found that CHG gel TSM could not completely replace the need for gauze dressings following new insertions in all cases. Our evaluation was small and did not collect the time and costs spent in dressing changes so we couldn't determine if it would be economical to use the CHG gel dressing routinely for all insertion. When the nursing time required for changing a dressing correctly is taken into consideration this seems intuitive, but needs to be more precisely examined.

When the dressing was used on existing insertion sites we observed that it appeared that we needed to change dressings less frequently than expected. With standard non-absorbent TSMs we change dressings whenever there is any blood under the dressing. Because the CHG gel dressing did absorb blood we were able to change it less frequently.


PICC with dressing in place. Small amount of blood at insertion site

New PICC insertion with blood contained in gel. No need to change these dressings.

Conclusions

- The use of CHG gel TSM was able to replace the initial gauze dressing, as the only dressing needed, on the majority of patients in the population studied.
- The CHG gel TSM could not completely replace the need for gauze dressings following new insertions without requiring some redressing in a subset of patients.
- With the use of the CHG gel TSM with existing insertion there appeared to be a decreased need for dressing changes in between scheduled dressing changes, since the appearance of blood at the site does not warrant dressing changes as it would with regular TSMs.
- A larger study needs to be conducted to better determine how frequently the absorbent CHG gel TSM will require replacement and its cost effectiveness in replacing the routine use of gauze after initial insertions, and decreasing the dressing changes needed for standard TSM.

References

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Disclosure

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