



A “Central Line Care Card” for Central Line Associated Bloodstream Infections in Pediatric Home Total Parenteral Nutrition Patients

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Central Line Associated Bloodstream Infections (CABSIs)

- CABSIs in children with intestinal failure¹⁻⁴
 - *on heparin lock therapy*: 8-11/1,000 catheter days
 - *on ethanol lock therapy*: 1-3/1,000 catheter days
- Management of CABSIs poorly studied
 - 12-35% attributable mortality per infection⁵

¹ Cober, *J Parenter Enteral Nutr* 2011; ² Jones, *J Pediatr Surg* 2010

³ Mouw, *J Pediatr Surg* 2008; ⁴ Wales, *J Pediatr Surg* 2011

⁵ Attar, *Curr Opin Clin Nutr Metab* 2001



Management of CABSI

- Packard's rule-out sepsis protocol for fever in GI-indicated TPN patients
 - If $T > 100.4F$ or $38.0C$
 - Obtain cath UA, UCx, and blood culture, CBCD, CRP, +/- COAG panel, +/- CHEM panel **from central line before starting antibiotics**
 - Start empiric broad spectrum antibiotics
 - Admit at least 48hr to rule out CABSI



Problems in Management of CABSI's

- Present to Stanford/Packard or Outside Hospital (OSH) ED
 - Poor communication between health systems¹
 - Poor coordination of care¹
 - No universal EMR; lack of interoperability between EMR systems²
- *breaches in care identified*

¹ *Institute of Medicine, 2006*

² *Fricton, Agency for Healthcare Research and Quality, 2008*



Aims & Hypotheses

1. Characterize breaches in care of home TPN patients presenting with fever and potential CABSIs.
 - Hypothesize more breaches at OSH than Stanford
2. Reduce breaches in care with “Care Card” intervention.
3. Improve patient/parent satisfaction with “Care Card” intervention.



Our Intervention: A “Central Line Care Card”

- Child ID, MDs, allergies, diagnosis, line info
- Instructions for parents (English or Spanish)

Name: _____	DOB: ___ / ___ / ___	Issued: ___ / ___ / ___
Primary MD: _____	Phone: _____	
Subspecialty MD: _____	Phone: _____	
Drug allergies: _____		
Primary diagnosis: _____		
Reason for line: TPN / _____	Placement date: ___ / ___ / ___	
Line type: Broviac / Hickman / Port / PICC / _____		
Size (Fr): _____	Brand: _____	Cat #: _____
Material: Silicone / Polyurethane / _____	Ok for EtOH locks? Y / N	
For Parents: If patient has fever over 100.4F or 38.0C		
• GO TO NEAREST ED, Urgent Care, or Primary MD		
• CALL PEDS GI at Stanford: 650-723-5070 or 650-723-6661		



Our Intervention: A “Central Line Care Card”

- Rule-out sepsis protocol *checklist* for MDs

For MDs: If patient presents to an ED or urgent care facility with T>100.4F or >38.0C:

- Please obtain cath UA, UCx, and blood culture, CBCD, CRP, COAG panel (if worried about DIC), +/- CHEM panel **from central line before starting antibiotics.**
- Start empiric broad spectrum antibiotics (vancomycin/ceftazidime) through central line unless other allergy/contraindication/resistant organism: _____
- CALL PEDS GI at Stanford: 650-723-5070 (transfer center) or 650-723-6661 (peds GI fellow on call) for **admission**. Per LPCH policy, **ALL** patients with fever and a central line require at least **48hr admission** to rule out line infection.



Primary Outcome: Breaches in Care

- Examples of breaches in care:
 - Blood culture not performed, or not drawn from line.
 - Antibiotics not administered, or administered before blood cultures drawn.
 - Patient not admitted.
 - Patient discharged inappropriately early (e.g. before negative cultures).



Methods

7/2010-7/2012

- 2 year pre-intervention (retrospective) chart study

8/2012-1/2014

- Post-intervention surveys
- 1.5 year post-intervention chart study

7/2012

- “Care Cards” distributed
- Pre-intervention surveys



Patient Selection

- Inclusion Criteria (N=36)
 - Current central line for GI-indicated TPN
 - Age 0-25
 - Patient at LPCH Peds GI clinic
- Exclusion Criteria
 - DNR order or palliative care



Results: Reduced Breaches in Care

- Pre- and post-intervention, Stanford/Packard had no breaches in care (N=43 and 30)
- OSH breached care in 36% of visits pre-intervention (N=25) vs. 25% of visits post-intervention (N=8)

→ *30% Reduction*



Results: Parent Satisfaction

- All parents (N=8) said card impacted their experience “extremely” or “a great deal” positively
- All parents “extremely” likely to recommend the card to friends and family

Out of:

- 1—extremely
- 2—a great deal
- 3—moderately
- 4—slightly
- 5—not at all



Results: Parent Satisfaction

- Info for Medical Staff

“When we got here, the nurse didn't know what to do. Then I showed the card, and she knew what to do.”

- Streamlined Responses

“It made things easier, doctors work a little faster.”

- Less Explanation from Parents

“It saved me a lot of breath.” / “My husband has no idea...what meds, etc. The card would be very helpful for him.”

- Parents Feel Empowered

“It gives us power, more of a voice.”

- Parents Feel Comforted

“When I first received it, I started crying; it felt like someone else was looking out for [my son].”



Next Steps

- Applying the Care Card to your practice:
 - Download editable file: tinyurl.com/carecard or tinyurl.com/linecarecard
 - >>> peds.stanford.edu/links/patient-care-tools.html
 - Nurse coordinator to track patients, update cards
 - Info for parents can be translated to other languages (Spanish provided)
 - **Consider integrating into EMR**
 - e.g. Pop-up when admitted to ED/Urgent Care



Conclusion

A low-cost, easily implemented “Central Line Care Card” may quickly reduce breaches in care of potential CABSIs, while improving parent satisfaction with care.

May lead to improved health outcomes.

May be useful in other indications for long-term central lines.



Acknowledgements

- Funding generously provided by the Stanford Medical Scholars Fellowship Program.
- Supported by the Carl and Patricia Dierkes Endowment for Nutrition Support and Home Care.
- Many thanks to Dr. Ann Ming Yeh, Nurse Colleen Nespor, Dr. John Kerner, and the Pediatric Gastroenterology team at Lucile Packard Children's Hospital.



THANK YOU

