

A Demonstration Project Evaluating a Nurse Practitioner Medically Led Hemophilia Treatment Center in Comparison to a Physician Medically Led Hemophilia Treatment Center

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Aim

To demonstrate that a nurse practitioner (NP) medically led hemophilia treatment center (MHC) does not have more adverse outcomes than a physician (MD) medically led hemophilia treatment center (MSU).

Indicators

Primary Endpoint - Number of hemophilia patients who have had ≥ 4 joint bleeds in one year.

Additional variables evaluated:

- Severe hemophilia patients on primary prophylaxis (# on /# not on prophylaxis)
- Severe hemophilia patients on secondary prophylaxis (# on /# not on prophylaxis)
- Severe hemophilia patients on prophylaxis event (# on /# not on prophylaxis)
- Severe hemophilia patients on episodic treatment (# on /# not on prophylaxis)
- Does the hemophilia patient on primary, secondary, episodic, or prophylaxis event log regularly (within a 3 month period)?
- Number of new bleeding disorders diagnosis (stratify for type –hemophilia, VWD, and platelet dysfunction disorders, severity, gender, and age)
- Satisfaction survey with specific questions on partnership in decision making.
- Has the patient (hemophilia/VWD) been seen within the recommended appointment time for comprehensive clinic (+/- 3 months annually severe hemophilia patients; 2 years - other bleeding disorders (BD) patients)
- Patients who have a primary care provider

Method

Patients of each hemophilia treatment center (HTC) who met the criteria of the indicators were included in this demonstration project.

- The NP HTC entered 171 patients - 42 hemophilia (all severity)
- The MD HTC entered 404 patients - 149 hemophilia (all severity)

The providers and staff of both institutions and statistician met prior to gathering data to develop the agreed upon the indicators.

Data were gathered over a one year period at each institution from 8/1/2014 to 7/31/2015.

Results

The NP led HTC did not have more adverse outcomes than a MD led HTC

The NP led HTC had more patients:

- Who regularly logged their factor treatments $p=0.023$
- Mean age of patients $p<0.0001$
- NP lead HTC mean age was 43.15
- MD lead HTC mean age was 30.55

The MD led HTC had more patients:

- Seen within 3 months of their recommended appointment time $p=0.0026$
- Who had a primary care practitioner $p=0.<0001$

The two HTCs did not differ significantly in the following:

- $>/+ 4$ joints bleeds in previous year (primary outcome indicator)
- Hemophilia severity
- Type of prophylaxis
- Inhibitor status
- Patient perception of involvement in decision making
- Episodic prophylaxis

Ethnicity was not a moderating factor because inhibitor status was not significant between centers although the MD center had more diversity in its population than the NP center (reflective of geographic area).

The NP patient population was older than the MD patient population with a slightly wider range of age.

Results

Hemophilia Patients without a Bleed ($p = 0.873716$)

	Mild	Moderate	Severe
NP HTC	17/17 (100%)	9/9 (100%)	2/15 (13%)
MD HTC	56/56 (100%)	3/30 (10%)	11/65 (17%)

Severe Hemophilia on Primary Prophylaxis vs. Other Treatment ($p=0.1284$)

* One patient not on any treatment, not included

	NP HTC (n=15)	MD HTC (n=64*)
Primary	4 (27%)	7 (11%)
Other	11 (73%)	56 (86%*)

Comparison of Prophylaxis Types in Severe Hemophilia

(no statistically significant differences: p ranges from .11 - 1.00 on pairwise comparisons, $p=0.33$ for 2 x 3 comparison)

	Primary	Secondary	Episodic
NP HTC	4 (27%)	5 (33%)	6 (40%)
MD HTC	7 (11%)	24 (38%)	32 (51%)

Patient Age Comparison ($p<0.0001$)

	NP HTC (n=171)	MD HTC (n=404; age missing on 1 patient)
Mean Patient Age	43.15	30.55

Hemophilia Severity NP HTC vs. MD HTC ($p=0.759572$)

Severity of Hemophilia	NP HTC (n=41)	MD HTC (n=151)
Mild	17 (41%)	56 (37%)
Moderate	9 (22%)	30 (20%)
Severe	15 (37%)	65 (43%)

Inhibitor Patients NP HTC vs. MD HTC ($p=0.284$)

Inhibitor Status	NP HTC (n=171)	MD HTC (n=405)
Inhibitor	1 (<1%)	7 (2%)
No Inhibitor	170 (99%)	398 (98%)

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Discussion

It is becoming more difficult to find qualified hematologists, especially adult hematologists, willing and able to staff HTCs. A future viable option that could increase the range of availability of this scarce resource would be to have one hematologist provide oversight and treatment planning for multiple HTCs. Day-to-day medical management can be provided by trained advance practice nurses (nurse practitioners) utilizing technology to communicate with the collaborating physician including but not limited to telemedicine, telecommunications, email, and telephone consultation.

The goal of this Demonstration Project was to establish evidence that an alternative model of care (the NP medically managed HTC) would be a viable option for the bleeding disorders community given the limited availability of hematologists and increasing numbers of coagulopathy diagnoses.

This Demonstration Project provides evidence that this model of care is sustainable and able to provide quality care without more adverse outcomes when a physician is not on site but available distantly for collaborative care.

Conclusions

- The NP led HTC did not have more adverse outcomes than a MD led HTC
- The NP medically managed hemophilia treatment center is a model of care that can be utilized across the United States as an avenue to increase access to the adult hematologist.
- Through collaboration, this model of care could increase access to care for those with bleeding disorders to trained subspecialists.

Limitations

- Populations were not randomly assigned to a provider creating a geographic selection bias
- Small population
- Nominal level of measures not allowing regression analysis (# of joint bleeds not available for both centers)
- Further research in this area is recommended.
- Patients from both HTCs are limited in clinic options due to distance from HTCs and timing of clinics