Shared Medical Appointments: A pathway to improve care for heart failure in the community

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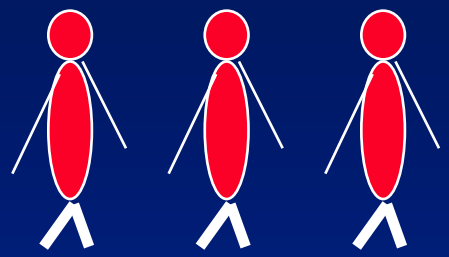
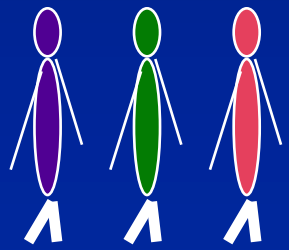
The Heart Failure Team
Concept 1



Multiple physicians
(Could be distant from others on team)

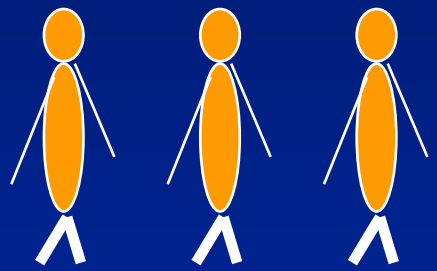
1 or 2 nurse coordinators direct flow of activity



Other members including home nursing group

The Heart Failure Team
Concept 2

Single physician
Hospital based



Nurse practitioners
administer clinic
Patients seen less
frequently by phys

NP directs flow to other
team members

Shared Medical Appointment (SMA)

- Original definition (Ed Noffsinger): Multiple patients receive education and physical exams in a group setting
- Our definition: a multidisciplinary disease management program intended to provide specialized extended care in a group setting to individuals diagnosed with a chronic illness.

Team Members

- Clinic Nurse/medical assistant
- Moderator
- Provider
- Documenter

Team Members

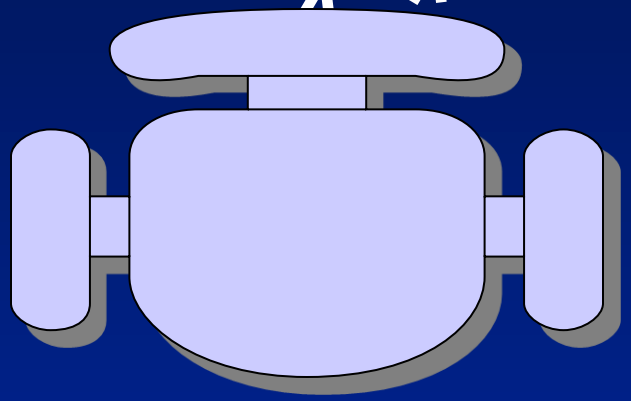
Single physician
Hospital based

- Clinic Nurse/medical assistant

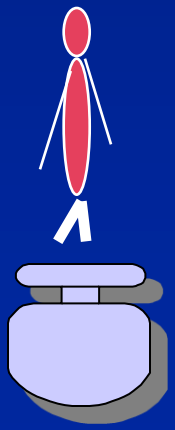
- Moderator

Pharmacist
Nutritionist

Patients



- NP Provider



Documenter

A typical clinic

- HF Team prepares the charts prior to the start of clinic
- Patients receive a letter explaining the Shared Medical appointment
- Upon arrival a HIPAA confidentiality statement is signed by patient and guest(s)
- A clinic nurse takes vital signs
- Patients are brought to a conference room and given a packet of materials

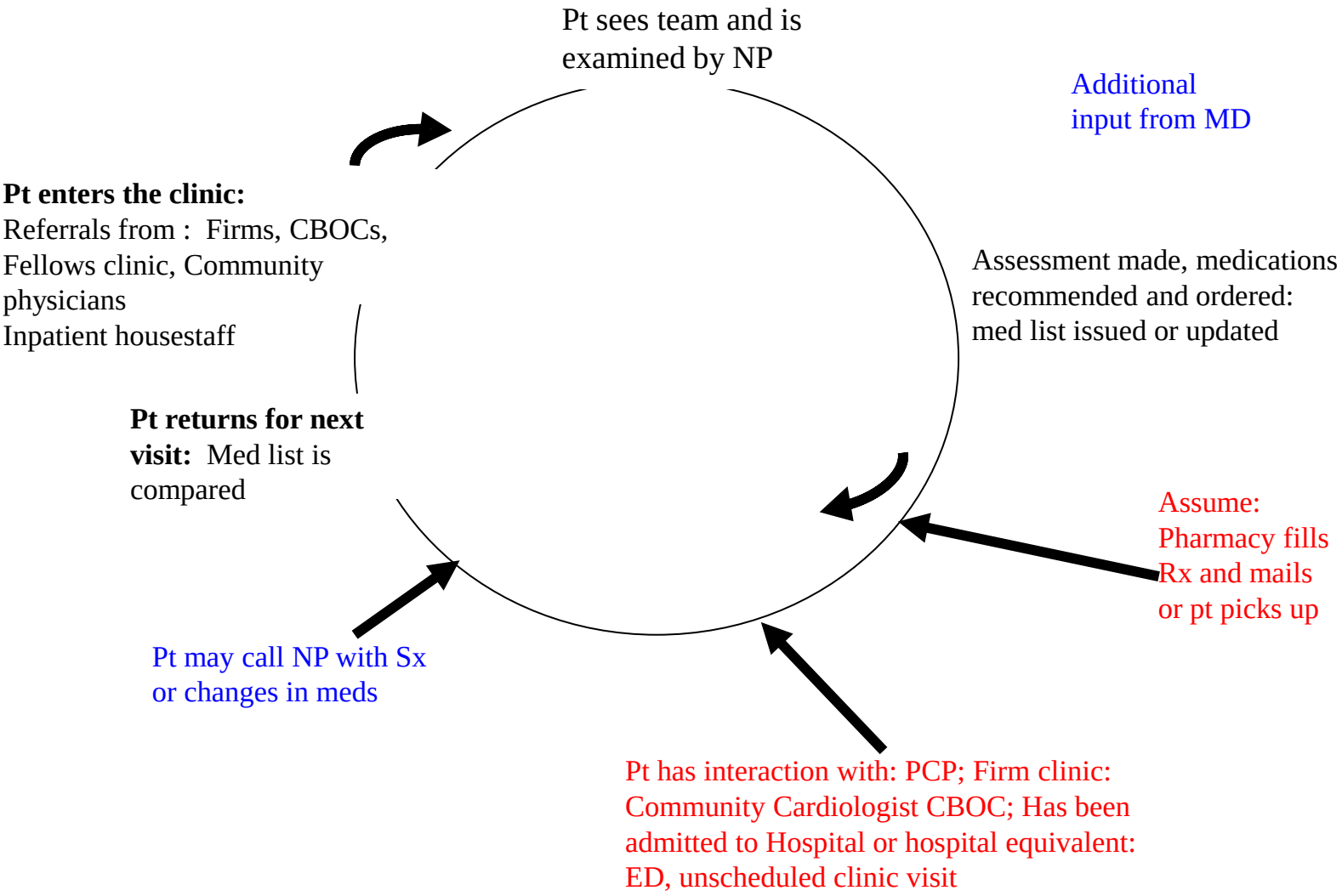
A typical clinic (cont.)

- At each visit
  - HF symptom questionnaire completed
  - Visit takes 90 minutes
  - HF educational topic is discussed
  - Patients are given tools (scales, BP cuffs, med fill boxes, wt. logs)
  - Patients are taken out of group one at a time and seen by a provider (about 8-10 minutes per patient), 8-12 patients per group

Shared Medical Appointment (SMA)

- Original definition : Multiple patients receive education and physical exams in a group setting
- Maximize use of provider time to see the most patients in the same time period as before
- Patients benefit from improved access to their physician and significantly increased education, while providers can boost their access and productivity without increasing hours.
- Our definition: a multidisciplinary disease management program intended to provide specialized extended care in a group setting to individuals diagnosed with HF.

Process Mapping



Aims

- **1. To determine if the NHeFT training program with a preceptorship changes provider behavior as measured by increases in RAAS inhibition and a concomitant decrease in diuretic dose comparing pre-training doses to post training doses in the same patients with a diagnosis of HF and EF <40%.**

- **2: To determine if the NHeFT training program with a preceptorship increases Guideline-evidenced HF medical therapy in new patients with HF and EF <40% identified after training when compared to the normed doses used in the HF trials.**

Endpoints:

- **Primary:**
  - **Pts with EF<40% on ACE/ARB and BB +- diuretic at any time and considered optimal medical therapy**
- **Secondary:**
  - **Pts with an increase in ACE/ARB or decrease in diuretic dose >=6 months post training/**

Definition

- **Success=**
  - **Normed doses or doses used in the RCT of**
  - **SOLVD (ACEI)**
  - **ValHeFT (ARB) and MERIT (BB).**

- **enalapril= 18 mg/d,**
- **metoprolol 149 mg/d,**
- **valsartan goal 320 mg/d**

Data collected: Patient population

- **All patients with ICD9 codes of HF including 428 and all modifiers.**
- **LV function with ejection fraction (EF) by reviewing each patient record.;**
- **CPRS records of ACEI/ARB by use and doses, Beta Blockers (BB) by doses, loop diuretics by doses.**
- **All ACEI converted to enalapril equivalents. All ARB's converted to valsartan equivalents and all diuretics converted to furosemide equivalents..**

Intervention

- **PI trained all staff providers for 2-3 days of didactics followed by seeing HF patients of the providers with them in their own clinic.**
- **Lorain was trained in Feb 07 for 2 consecutive days.**
- **The PI was received by the staff enthusiastically.**
  - **All were engaged in the process of the education. All providers saw all of the patients with the PI. Patients had been moved so that the staff could attend the education didactics.**
- **In contrast, the staff at the Painesville CBOC was fragmented in attendance of the didactic sessions.**
- **The PI saw patients individually with 2 clinicians. One physician provider stated that she did not have time to attend the teaching sessions.**

Analysis:

- **Data were electronically abstracted from the CPRS system.**
- **Medication name, dose, drug class, issue and fill date, patient sex, age, any LV measurement, method and date.**
- **A unique patient identifier was generated using 3-stage algorithm and the de-identified data used to merge demographic and medication tables for analysis.**
- **Data are reported as counts or percentages of the Lorain or Painesville study denominator, unless noted.**
- **Means and SD are reported as needed.**
- **Tests comparing proportion or associations across independent groups were performed using SAS version 9.12 with a significance level of $p<0.05$.**
- **No adjustments were made for multiple comparisons as all hypotheses were predefined before data collection.**

Results

	Lorain	Painesville
N	165	**183**
Mean age (SD)	73.7 (10.7)	**75.0 (10.4)**
Males	99%	**97%**
Race (of % known) - African American - Caucasian - Hispanic	 16% 84% 0%	 **2%** **97%** **1%**
Missing Race/ethnicity	70%	**45%**
Met Primary Endpoint	71%	**60%**
Documentation of LV - **Normal** - **Low** - **Inadequate (missing)**	 **35%** **46%** **19%**	 **36%** **40%** **24%**

Results

	Lorain	Painesville	p-value
N	76	73	**n/a**
Mean LV (SD)	24 (8.6)	27 (7.3)	**NS**
Met Primary Endpoint (n)	(60) 79%	(50) 69%	**NS**
Met Secondary Endpoint (n)	(10) 13%	0%	**p<0.001***
Optimal medical therapy (n)	**(11) 14%**	**(11) 15%**	**NS**

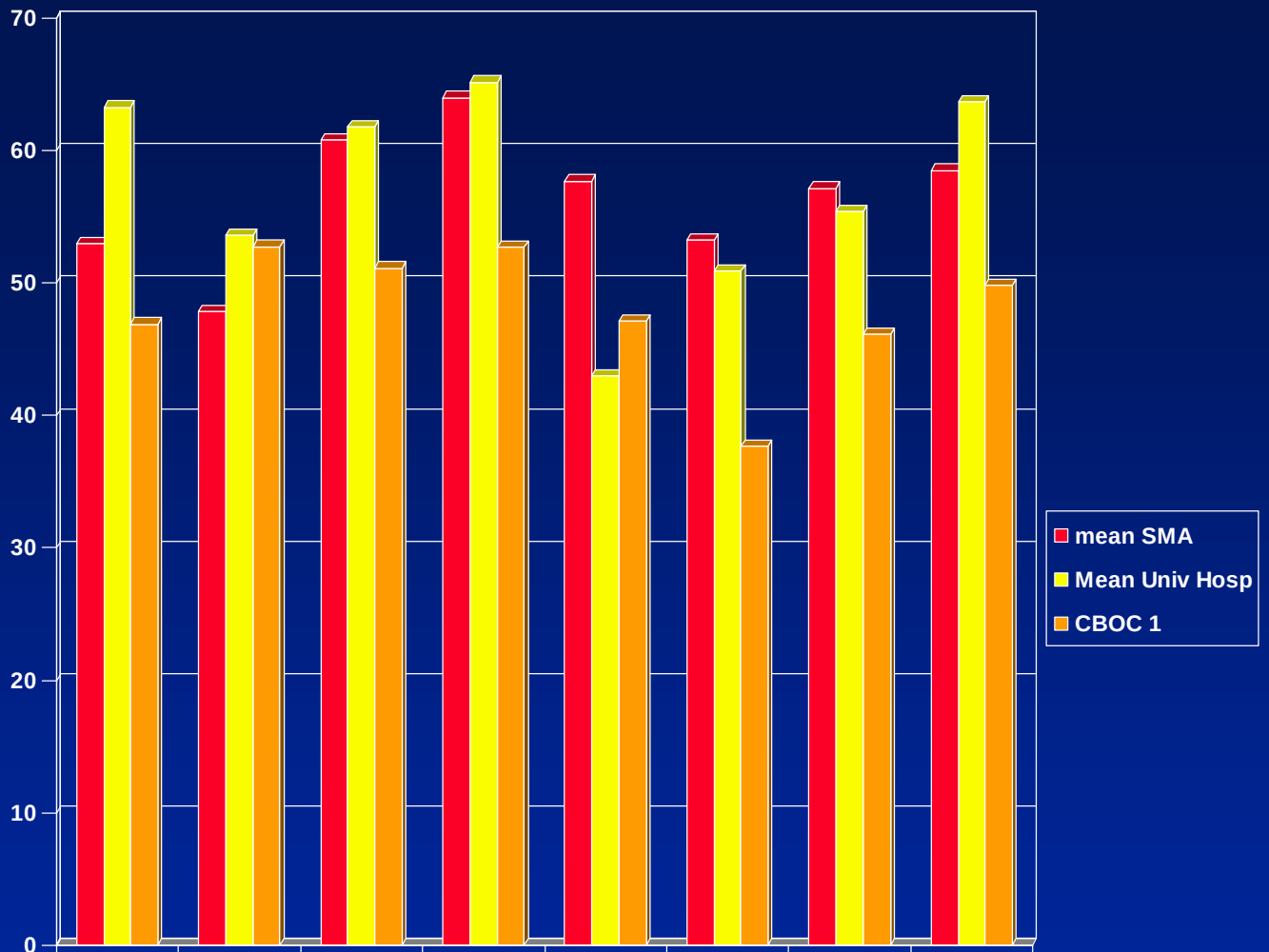
Secondary endpoint reflects any increase in ACE-I or ARB dosing and/or a decrease in loop diuretic

Optimal medical therapy reflects those on any ACE-I or ARB and a Beta-blocker at target doses at any time during the study, regardless of loop diuretic.

Results and Comparison to SMA

Drug class	Lorain	Painesville
ACE-I (Enalapril equiv.)	17 mg (21)	**25 mg (24)**
ARB (Valsartan equiv.)	220 mg (210)	**147 mg (109)**
BB (Metoprolol equiv.)	57 mg (95)	**69 mg (63)**
Loop (Furosemide equiv)	**51 mg (79)**	**66 mg (65)**

	Clinic	n	Baseline	6 mo	Δ
ACE inhibitors (enalapril mg=)	SMA	266	27.9*	29.3	1.4^
	Traditional	253	20.6	23.1	2.5^
β-blockers (metop mg=)	SMA		123.5*	142.4	18.9
	Traditional		89.8	110.5	20.7
Diuretic (lasix mg=)	SMA		51.6	44.7	-6.9
	Traditional		42.8	42.4	-0.4



	Physical Limitation	Symptom Change	Symptom Frequency	Symptom Severity	Quality of Life	Social Limitation	Overall Summary	Clinical Summary
mean SMA	52.93	47.83	60.76	63.93	57.65	53.22	57.13	58.48
Mean Univ Hosp	63.22	53.57	61.73	65.12	42.98	50.88	55.35	63.63
CBOC 1	46.89	52.73	51.11	52.67	47.11	37.67	46.11	49.78

Conclusions

1. **The populations of both CBOCs are similar in age, gender, ethnicity and LV function by EF.**
2. **Over 20% of patients with a diagnosis of HF had no documentation of LV function.**
3. **More patients in the Lorain CBOC met the primary endpoint of ACE/ARB + BB +- diuretic at any one time regardless of LV function.**
4. **In patients with EF<40% a significantly greater # of patients in the Lorain CBOC met the secondary endpoint of increasing ACE/ARB dosing and decreasing diuretic dose where as no patient in the Painesville CBOC, met that endpoint.**
5. **Doses of ACEI were lower in the Lorain CBOC but ARB doses were higher whereas BB doses were higher in Painesville. Loop diuretic doses were lower in the Lorain CBOC and compatible with the higher doses of ACEI/ARB combined.**

Discussion

- **“Reverse” preceptorship is feasible and can lead to modest improvements in Guideline based medical therapy for HF when the provider team is enthusiastic about learning.**
- **Documentation of LV function needs to be further encouraged in records of patients with HF so that the Guideline-driven care for low EF patients be appropriately applied.**

Reflections and Future Studies

- The enthusiasm of the Lorian CBOC staff and providers may have influenced the results of this observation.
- Self efficacy was not assessed in this pilot project.
- In subsequent studies, self efficacy of behavior change in adopting Guideline-evidenced based care in HF should be examined prior to instituting the NHeFT program.
- In addition, the expected social support of peers is an important aspect of Bandura's self efficacy model and may predict success in behavior change.

Medication doses and VS in SMA vs. traditional clinic

	Clinic	n	Baseline	6 mo	Δ
ACE inhibitors (enalapril mg=)	SMA	266	27.9*	29.3	1.4^
	Traditional	253	20.6	23.1	2.5^
β-blockers (metop mg=)	SMA		123.5*	142.4	18.9
	Traditional		89.8	110.5	20.7
Diuretic (lasix mg=)	SMA		51.6	44.7	-6.9
	Traditional		42.8	42.4	-0.4
HR (bpm)	SMA		75.0	71.3	-3.7^
	Traditional		73.5	72.1	-1.4^
BP (mmHg)	SMA		129/71	123/67	-6/-4^
	Traditional		126/69	122/67	-4/-2^

* = p<0.05 SMA vs. Traditional ^ = P<0.05

Parameter	*Age*	*SBP*	*DBP*	*HR*	*Wt lbs*	*EF*	*Furosemide Dose**	*ACE I Dose**
Mean	*65.3*	*128.5*	*68.9*	*76.5*	*203.9*	*26.7*	*69.2*	*35.4*
Std dev	*12.2*	*28.0*	*8.9*	*10.4*	*45.3*	*15.9*	*55.8*	*24.8*