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EHR Visual Overlay Promises to Improve Hypertension Guideline Implementation

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EMR Visual Overlay Promises to Improve Hypertension Guideline Implementation

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Disclosures and Conflicts of Interest

- None

Background

- 2017 ACC/AHA guidelines for hypertension management updates [4]:
  - Increasing hypertension awareness
  - Encouraging lifestyle modification
  - Antihypertensive medication initiation and intensification on US adults with high ASCVD risk
- More integrated healthcare management means more time spent with patients, with more guideline-driven targets to achieve
- Average work day of 8 hours, with average of 17.5 minutes spent per patient [2,3]
- Hypertension is the most common condition managed by primary care physicians in developed countries [1]
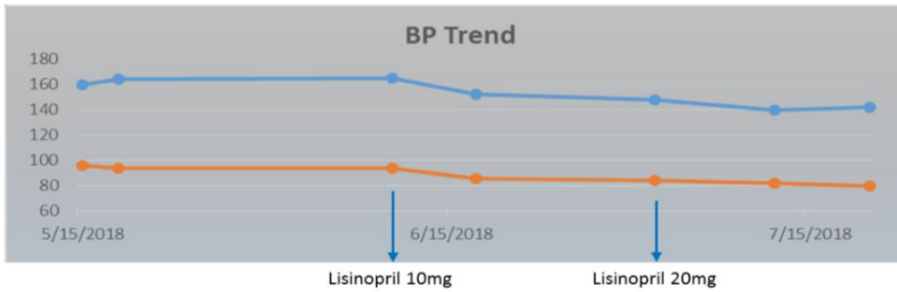
1. Finley CR, Chan DS, Garrison S, Korownyk C, Kolber MR, Campbell S, Eurich DT, Lindblad AJ, Vandermeer B, Allan GM. What are the most common conditions in primary care? Systematic review. Can Fam Physician. Nov 2018; 64(11):832-840.
2. Gilchrist V, McCord G, Schrop SL, King BD, McCormick KF, Oprandi AM, Selius BA, Cowher M, Maheshwary R, Patel F, Shah A, Tsai B, Zaharna M. Physician activities during time out of the examination room. Ann Fam Med. Nov-Dec 2005; 3(6):494-9.
3. Gottschalk A, Flocke SA. Time spent in face-to-face patient care and work outside the examination room. Ann Fam Med. Nov-Dec 2005; 3(6):488-93.
4. Whelton PK, Carey RM, Aronow WS, et al. Guideline for the prevention, detection, evaluation, and management of high blood pressure in adults. J Am Coll Cardiol. 2018; 71:e127-e248.

Our Study

- Quality improvement study

- Aim: assess the utility of a visual decision support (VDS) overlay tool in managing a patient with essential hypertension on Epic EMR.

- Hypothesis: utilization of VDS can reduce physician time burden in management of essential hypertension, while improving adherence to guidelines

Design

- Primary care physicians were tasked with two simulated patient encounters for essential hypertension
    - First simulation – use of standard Epic EMR
    - Second simulation – use of standard Epic EMR + VDS overlay
- Endpoints:
    - Total time spent per encounter
    - Adherence to guidelines
- 70 case simulations in total
- Multiple choice questionnaire used to track management decisions

BP Trend

180
160
140
120
100
80
60

5/15/2018   6/15/2018   7/15/2018

Lisinopril 10mg   Lisinopril 20mg

Antihypertensive Medication	Dose	Therapeutic Intensity
Lisinopril	20 mg	0.5
	Total	0.5

HTN ORDER SET LINK

Current BP 136 86   **Goal BP** <130 80   **To Meet Goal** ↑ Rx Intensity 0.25 - 0.5

Cardiovascular Risk

16.5%
Dec 2018
Today
12.3%
10% if BP < 130/80

ASCVD Risks =	12.30%
Age	54
Gender	Male
Race	African American
SBP	136
DBP	86
Choleterol	210
HDL	45
LDL	130
Diabetic	No
Smoker	Former
On HTN Treatment	Yes
On Statin	Yes
On Aspirin	Yes

Opportunities for Your patinet

0
-2
-4
-6
-8
-10
-12

DASH Diet, 5kg Weight Loss, Salt Reduction, 90 min/wk..., Smoking..., Reduce Alcohol, Increase K+ Intake

You have prescribed diet and exercise in the last 6 months

Social Determinants

Good Healthy Food Access

Poor Transportation Access

Moderate Neighborhood Crime

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1. Fred's repeat BP is 138/84. What would you advise Fred about his BP today?
- ○ Doing well. No change.
- ○ Doing well but recommend increase in BP medication.
- ○ Doing well but recommend dietary changes.
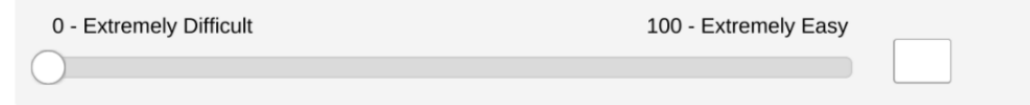- ○ Doing well but recommend change in BP medication and diet.

2. Did you determine Fred's ASCVD score?
- ○ Yes
- ○ No

3. Based on the 2017 ACC/AHA guidelines, what should Fred's goal BP target be?
- ○ < 150/90 mmHg
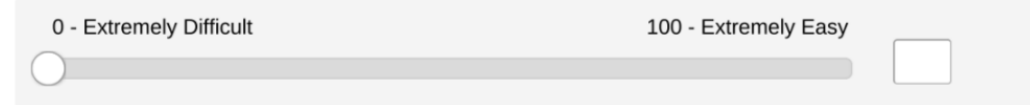- ○ < 140/90 mmHg
- ○ < 130/80 mmHg
- ○ < 120/70 mmHg

4. How easy do you find EPIC to get key information you need to advise Fred?

0 - Extremely Difficult ———————————— 100 - Extremely Easy

5. How easy do you find EPIC to determine a patient's ASCVD score?

0 - Extremely Difficult ———————————— 100 - Extremely Easy

6. How effective is EPIC at helping you follow HTN guidelines

0 - Extremely Difficult ———————————— 100 - Extremely Easy

Results

- Use of VDS compared to usual EHR was associated with:
  - Higher proportion of correct guideline prescribing (94% vs. 60%, p<0.01)
  - More ASCVD risk determination (100% vs. 23%, p<0.01)
  - More correct BP target identification (97% vs. 60%, p<0.01)
  - Decreased length of visit by 2 minutes on average (p<0.01)

- On a 10-point scale, clinicians rated the VDS 9.2 for ease of gathering necessary information to treat HTN as compared to 5.9 for standard EMR (p<0.01)

Results
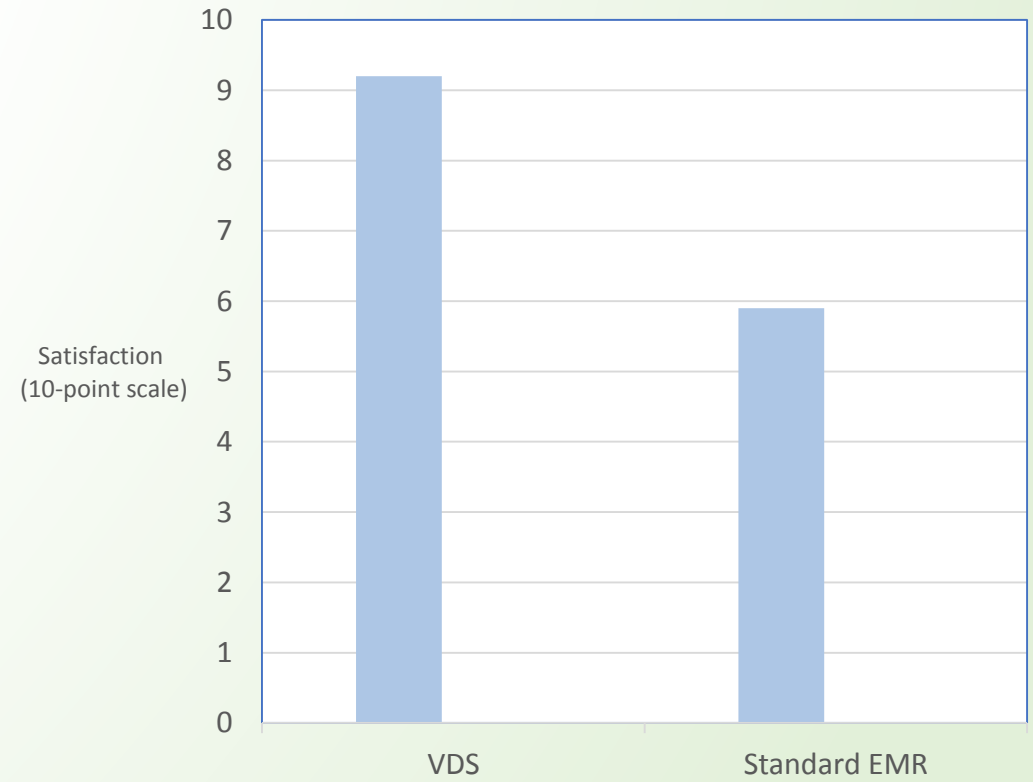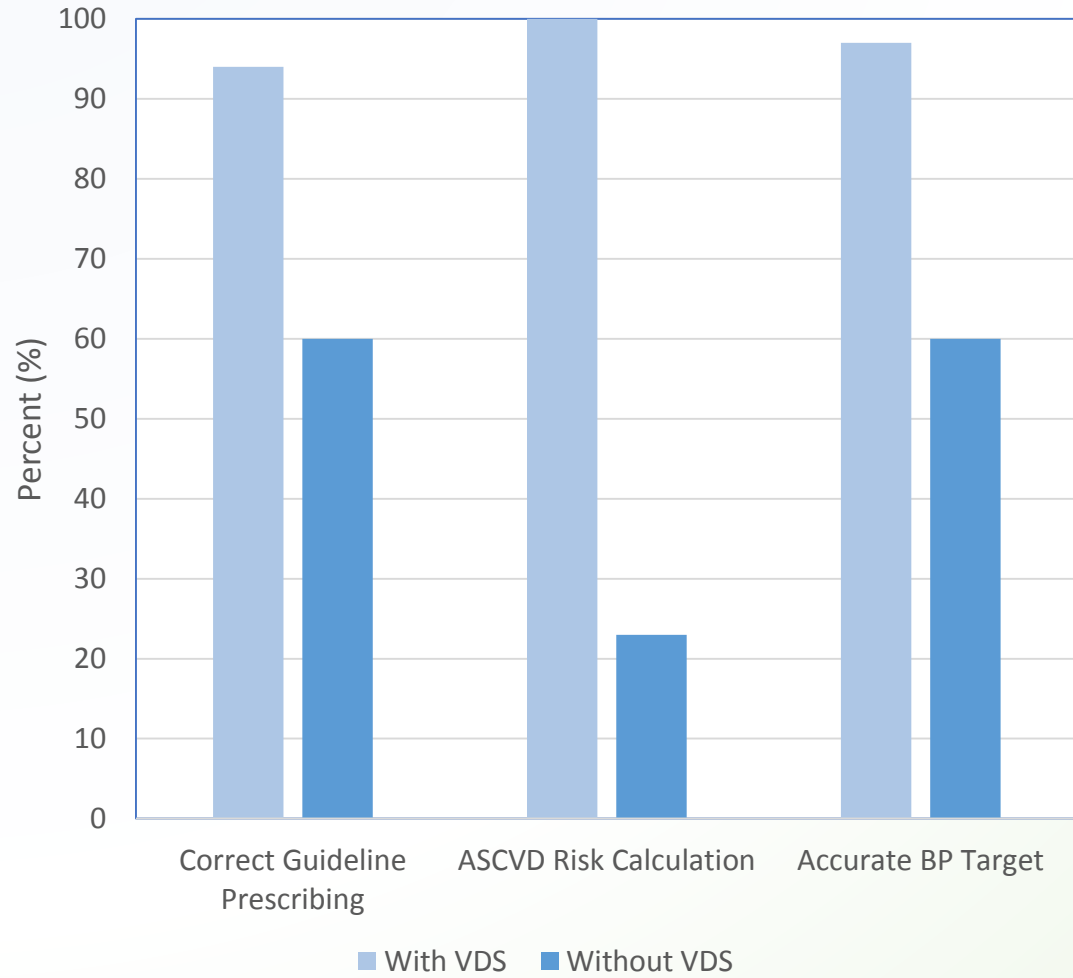
Discussion

- Opportunity to improve guideline adherence while shortening length of time in management of essential HTN

- Increasing provider satisfaction

- Proof of concept for visual decision support in management of chronic disease (diabetes, heart failure, coronary artery disease)

References

1. Finley CR, Chan DS, Garrison S, Korownyk C, Kolber MR, Campbell S, Eurich DT, Lindblad AJ, Vandermeer B, Allan GM. What are the most common conditions in primary care? Systematic review. Can Fam Physician. Nov 2018; 64(11):832-840.

2. Gilchrist V, McCord G, Schrop SL, King BD, McCormick KF, Oprandi AM, Selius BA, Cowher M, Maheshwary R, Patel F, Shah A, Tsai B, Zaharna M. Physician activities during time out of the examination room. Ann Fam Med. Nov-Dec 2005; 3(6):494-9.

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