How to Use Midlevel Providers Effectively

Maria Navar, MSN, FNP-C, CDE

Disclosure

I have no relevant financial relationship to disclose

Thank you!

To

Dr. Friedman for giving us this opportunity!

Kaiser Permanente and UCLA CTSI for the financial support for this event to be a reality

Role as a Nurse Practitioner in DM Clinic at MLK Jr., OC

• Work autonomously at assessing, diagnosing, managing, treating, and following patients with diabetes and the co-related chronic diseases that accompany diabetes
• Follow Dr. Mayer Davidson’s approved detailed treatment algorithms for diabetes, hypertension, and dyslipidemia

Cont - Role

• Provide *education to patients and their families
• Provide high quality patient care
• Improving patient outcomes
  **HbA1c, BP, Lipids
• Improve patient satisfaction***
• Cost effective****(decrease U/C visits, decrease hospitalization, preventive care)

Function

• Educator – educate patients and their families: difference btw type 1 and type 2 diabetes, risk of DM – *(Myths) pathophysiology of disease, medications – orals (how they work and when to take) insulin**(when it works and when to inject) s/s of hypo/hyper and what to do? complications, sick days
Continue – Function/Educator

- importance of exercise, diet/nutrition (weight management), smoking cessation, stress management – meeting the psychosocial needs of the pt. (depression) individualized treatment
- Self monitoring of BG – on multiple shots of insulin – check BG alternating

Cont

- Education – is a time consuming process – a comprehensive class can not be done in one visit
  Focus on their particular 1 -2 issues at each visit, but on every visit make sure to teach
- Avoid using medical jargon - poorly educated minority population (some patients can not read or write)

EDUCATION:
Empowers the patients and their families – it gives patients the ability to participate in disease self management – and have control of their disease/s

MLK Jr., OC - Diabetes Clinic

- In our clinic each provider has nine sessions per week – frequency of visits or interactions depend on the treatment/control of patients (orals alone, combination of orals and insulin, or insulin alone)
- Comprehensive Diabetes clinic F/U every 3 to 4 months
- New patients in our clinic, are scheduled for classes
- We follow btw 800 – 1000 patients

Cont

- HbA1c results from the lab, reported monthly but requested every 3 – 4 months on all patients; our results show:
  - < 7.0% = 33% (1/3 of patients)
  - < 7.5% = 50%
  - < 8.0% = 66% (2/3 of patients)
  - > 9.0% = ~ 15% = Mostly based on new patients or non adherent to treatment recommendations or f/u
- 50% of all our patients are on insulin

Thank you!!
Diabetes Case Management
Loretta Ball NP-C, CDE, BC-ADM

Disclosure
I HAVE NO RELEVANT FINANCIAL RELATIONSHIP TO DISCLOSE

Diabetes Education and Clinical Program
- Inpatient Diabetes Education
  Nia Bakewell RN, CDE
  Socorro Marquez-Torres RN
- Diabetes Case Management
  Jose Mendoza RN, CDE
  Loretta Ball NP-C, CDE, BC-ADM
- Diabetes DMP
  Juan Olmos RN, CDE
  Noemi Capistrano NP-C, CDE

Components of Diabetes Management Program
- Diabetes Education Classes
- 1-to-1 Teaching For Insulin Administration
- Case Management

Diabetes Education Classes

<table>
<thead>
<tr>
<th>General Facts</th>
<th>Exercise</th>
<th>Hypoglycemia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrition</td>
<td>Self Blood Glucose Monitoring</td>
<td>Complications</td>
</tr>
<tr>
<td>Medication</td>
<td>Foot Care</td>
<td>Sick Days Hyperglycemia Stress</td>
</tr>
</tbody>
</table>

Referrals For Case Management
- Must complete pink referral form
- Current A1c (>8)
- Eye status
- Outcome desired (glycemic & other goals)
- Hypoglycemia?
- Current phone number
Diabetes Case Management
- Identify barriers to compliance
- Application of theory learned in class
- Frequent insulin adjustment
- Carbohydrate counting
- Interpretation of lab results
- Poly-pharmacy
- Goal setting
- Grad program

Barriers To Education
- Language Barriers
- Low Literacy Skills
- Health Beliefs/Cultural Beliefs
- Self-Efficacy/Empowerment
- Readiness To Change
- Emotional Well-Being
- Substance Abuse

Steps For Facilitating Empowerment
- Start with the patient’s agenda
- Work to individualize treatment plan
- Step by step approach
- Facilitate problem solving skills
- Use contracts / goal setting
- Involve family and significant others
- Nourish emotional coping skills

Current Goals For Case Management
- A1c < 7.0
- LDL < 100
- Blood Pressure < 140/80

Psychosocial Goals For Case Management
- Pre-Screening For Depression
- PHQ-9 Depression Questionnaire
- Evaluation by Dr. Kaplan Diabetes Clinic
- Social Worker: Referrals for follow up Community Mental Health Clinic
- Antidepressant Medication

Accord and Advance Trials
- Need for individualized A1c targets for high risk patients
- History of cardiovascular events
- CKD or ESRD
- Age and duration of diabetes
- Microvascular complications
Possible Early Worsening of Diabetic Retinopathy

- Retrospective study by Dr. Ana Shurter
- Patients with moderate to severe retinopathy may have increased risk.
- Benefit to decreasing A1c gradually
- Case management needed to ensure A1c doesn’t drop too quickly
- Repeat eye photos at shorter time interval

Prevent Progression of Microalbuminuria

- ACE or ARB Therapy
- Monthly albumin/creatinine ratios
- Adjust ACE/ARB at 1-2 week intervals
- Monitor Blood Pressure
- Check K+ and Creatinine 5-7 days after each dose change
- Low potassium diet / kayexalate prn

Management of Hyperlipidemia

Hypertriglyceridermia

- Monthly medication dosage adjustments
- Medical Nutrition Therapy
- Monthly lipid levels
- Addition of Fenofibrate/Niacin with statin
- Frequent monitoring of hepatic function
- Monitor CK if symptomatic

Diabetes Case Management: Statistical Analysis

213 Case Management Graduates (pre-existing diabetes clinic program)

- 97 males
- 116 females
- Average Age: 44.9 years
- Pediatric Patients: 5
- New Diagnosis of Diabetes: 55
- Average Duration of Diabetes: 11.8 years
- Average Time in Program: 5.9 months

Blood Pressure

- Average at Start
  - 129 systolic
  - 73 diastolic
- Average at Graduation
  - 123 systolic
  - 71 diastolic
Demographics

- Number of Patients – 367
- Age – 51.2 ± 10.6 years
- Disease Duration – 6.9 ± 6.6 years
- Females – 71%
- Race/Ethnicity
  - African-American - 80 (22%)
  - Caucasian - 2 (0.5%)
  - Latino - 283 (77%)
  - Asian - 2 (0.5%)
- Type 1 diabetes – 2 (0.5%)
- Type 2 diabetes – 365 (99.5%)

STUDY PROTOCOL

- Los Angeles County Community Clinic
- Poor, poorly educated, mostly uninsured population
- Patients randomly selected from adult clinics
- Nurse followed detailed algorithms and supervised by an endocrinologist
- Endocrinologist met with nurse once per week and was available by phone
- Patients followed for one year

Disclosure

- I have no financial interest to disclose

EDUCATION AND INCOME LEVELS

- Subset of Latino patients (137/283) queried
- Education (n=102) – 73% had 6th grade or less
- Household Income (n=63) – 95% <$25,000

THANK YOU!

Nurse Diabetes Health Care Outcomes

Maria Blanco Castellanos, R.N. C.D.E.
Latino Community Diabetes Council
### FINAL TREATMENTS

<table>
<thead>
<tr>
<th></th>
<th>Usual Care (Prior Year)</th>
<th>Nurse-Directed Care</th>
<th>P Value (Chi Square)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>331</td>
<td>367</td>
<td></td>
</tr>
<tr>
<td>Diet only</td>
<td>14 (4%)</td>
<td>9 (2%)</td>
<td>NS</td>
</tr>
<tr>
<td>One oral drug</td>
<td>108 (33%)</td>
<td>71 (19%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>≥2 Oral drugs</td>
<td>145 (44%)</td>
<td>193 (53%)</td>
<td>&lt;0.025</td>
</tr>
<tr>
<td>One insulin injection</td>
<td>2 (1%)</td>
<td>1 (1%)</td>
<td>NS</td>
</tr>
<tr>
<td>Bedtime insulin*</td>
<td>47 (14%)</td>
<td>85 (23%)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>≥2 Insulin injections</td>
<td>15 (4%)</td>
<td>8 (2%)</td>
<td>NS</td>
</tr>
</tbody>
</table>

### OUTCOME MEASURES

**Hb A1C - %**

<table>
<thead>
<tr>
<th></th>
<th>Usual Care* (n=303)</th>
<th>Nurse-Directed Care (n=364)*</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial</td>
<td>9.3 ± 2.5</td>
<td>8.8 ± 2.5</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Final</td>
<td>8.7 ± 2.4</td>
<td>7.0 ± 1.3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Change</td>
<td>-0.6 ± 2.8</td>
<td>-1.8 ± 2.6†</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>P Value</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td></td>
</tr>
</tbody>
</table>

* Prior year
† 3 patients had hemoglobinopathies
‡ n=361 (3 patients had only one test)

### OUTCOME MEASURES

**Hb A1C – Percent meeting goal of <7.0%**

<table>
<thead>
<tr>
<th></th>
<th>Usual Care* (n=303)</th>
<th>Nurse-Directed Care (n=361)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial</td>
<td>17%</td>
<td>28%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Final</td>
<td>28%</td>
<td>59%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>P value</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td></td>
</tr>
</tbody>
</table>

* Prior year

### OUTCOME MEASURES

**LDL Cholesterol – Percent meeting goal**

<table>
<thead>
<tr>
<th></th>
<th>Usual Care* (n=244)</th>
<th>Nurse-Directed Care (n=366)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial</td>
<td>51%</td>
<td>50%</td>
<td>NS</td>
</tr>
<tr>
<td>Final</td>
<td>50%</td>
<td>82%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>P value</td>
<td>NS</td>
<td>&lt;0.001</td>
<td></td>
</tr>
</tbody>
</table>

* Goal <130 mg/dl in year 1 and <100 mg/dl in years 2 and 3
† 352 patients had at least 2 values

### PREVENTABLE DIABETES-RELATED URGENT CARE (UC) AND EMERGENCY ROOM (ER) VISITS/HOSPITALIZATIONS (HOSP)

<table>
<thead>
<tr>
<th></th>
<th>Year Prior</th>
<th>Nurse-Directed Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>UC/ER</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>Hosp</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>5</td>
</tr>
</tbody>
</table>

76% reduction (P <0.001)

<table>
<thead>
<tr>
<th></th>
<th>Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>UC/ER</td>
<td>$129,176</td>
</tr>
<tr>
<td>Hosp</td>
<td>$24,630</td>
</tr>
</tbody>
</table>
TREATMENTS

<table>
<thead>
<tr>
<th></th>
<th>Initial</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>178</td>
<td></td>
</tr>
<tr>
<td>One oral drug</td>
<td>7 (4%)</td>
<td>9 (6%)</td>
</tr>
<tr>
<td>≥2 oral drugs</td>
<td>60 (34%)</td>
<td>18 (10%)</td>
</tr>
<tr>
<td>Bedtime insulin*</td>
<td>44 (25%)</td>
<td>15 (8%)</td>
</tr>
<tr>
<td>≥2 Insulin injections</td>
<td>53 (30%)</td>
<td>132 (74%)</td>
</tr>
<tr>
<td>Premixed insulin</td>
<td>14 (8%)</td>
<td>4 (2%)</td>
</tr>
</tbody>
</table>

*plus oral drugs

CARVE IN MODEL RESULTS

A1C LEVELS (Mean ± SD)

- Initial – 11.1% ± 2.3
- Final – 7.2% ± 0.9
- Delta - -3.9% ± 2.5

N = 178 patients; 74% on split-mixed and 8% on bedtime insulin after ~10 months of RN nurse – directed diabetes care

(AM J Manag Care 16:652-656, 2010)

CARVE IN MODEL RESULTS

(PERCENT ACHIEVING TARGETS)

<table>
<thead>
<tr>
<th>Measure (Target)</th>
<th>Baseline</th>
<th>Final</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hb A1c (&lt;7.0%)</td>
<td>0%*</td>
<td>49%</td>
<td>-</td>
</tr>
<tr>
<td>LDL Chol (&lt;100 mg/dl)</td>
<td>43%</td>
<td>96%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Triglyceride (&lt;150 mg/dl)</td>
<td>55%</td>
<td>83%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Systolic BP (&lt;130 mm Hg)</td>
<td>43%</td>
<td>90%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Diastolic BP (&lt;80 mm Hg)</td>
<td>77%</td>
<td>95%</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*A1C >8.0% required for referral
†McNemar’s test

Hb A1c Outcomes of Nurse Following Treatment Algorithms for One Year in a Minority Population* (~75% Latinos, 25% African-Americans)

- Study #1 (N = 367 randomized patients)
- Hb A1c levels fell from 8.9% to 7.0%
- (25% ended up on insulin – mostly bedtime alone)
- Study #2 (N = 178 referred patients)
- Hb A1c levels fell from 11.1% to 7.2%
- (83% ended up on insulin – mostly ≥2 injections)


PERCENT ACHIEVING A1C (<7.0%), LDL CHOL (<100 MG/DL) AND BP (<130/80 MM HG) GOALS

<table>
<thead>
<tr>
<th>Year (Ref)</th>
<th>N</th>
<th>Setting</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002 (1)</td>
<td>1,372</td>
<td>Two Urban Medical Centers</td>
<td>3.2</td>
</tr>
<tr>
<td>2004 (2)</td>
<td>1,218</td>
<td>NHANES III</td>
<td>7.3</td>
</tr>
<tr>
<td>2005 (3)</td>
<td>404</td>
<td>NHANES1999-2000</td>
<td>5.2</td>
</tr>
<tr>
<td>2005 (4)</td>
<td>1,765</td>
<td>Academic Medical Centers</td>
<td>10.0</td>
</tr>
<tr>
<td>2007 (5)</td>
<td>7,120</td>
<td>Population Survey - Australia</td>
<td>2.0</td>
</tr>
<tr>
<td>2008 (6)</td>
<td>395</td>
<td>Academic Hospitals</td>
<td>13.0</td>
</tr>
<tr>
<td>2008 (7)</td>
<td>3,131</td>
<td>Endocrine Practices</td>
<td>7.3</td>
</tr>
<tr>
<td>2008 (7)</td>
<td>3,971</td>
<td>Primary Care Practices</td>
<td>8.5; 12.6</td>
</tr>
<tr>
<td>2009 (8)</td>
<td>1,694</td>
<td>NHANES 1999-2000</td>
<td>12.2</td>
</tr>
<tr>
<td>2009 (9)</td>
<td>511</td>
<td>Primary Care Practices</td>
<td>7.5</td>
</tr>
<tr>
<td>2010 (11)</td>
<td>178</td>
<td>Community Clinic – Minorities</td>
<td>46.9</td>
</tr>
<tr>
<td>2013 (11)</td>
<td>1,343</td>
<td>NHANES 2007-2010</td>
<td>18.8</td>
</tr>
</tbody>
</table>

*Chronic Care Model: Diabetes Care (DC) 25:718; *JAMA 291:335; *DC 28:337; *DC 28:1490; *DC 31:2238; *Am J Med 122:443; *JAMA 181:37; *Am J Manag Care 16:652; *DC 36:2471

KEY COMPONENTS FOR GOOD DIABETES CARE

- Knowledgeable provider
- Time to interact with patient
- Communication with patient
- Educated patient
- Patient’s ability to carry out treatment recommendations

Nurses following protocols under appropriate supervision do it better!
Diabetes can be Controlled

- Committed Team
- Culturally Sensitive Care
- Patient Education
- ADA Adherence
- Ongoing Monitoring
  - Treatment
  - Labs

Join Us!

Latino Community Diabetes Council
10820 Beverly Boulevard, Suite A5-184
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LCDCLA@aol.com

Our mission is to provide diabetes education, advocacy, and resources for people with diabetes.

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Sergio Villegas, MD

Thank you!

Questions?

On behalf of all of us (midlevel providers - NPs, PAs, RNs, and Pharmacists) that have been under the wings of Dr. Mayer Davidson and Dr. Eli Ipp mentored and following their algorithms

We would like to say: “THANK YOU”

DR. DAVIDSON and Dr. IPP

For your visionaries and constant support!