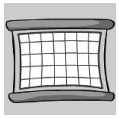
Evaluating the Adequacy of Care in Type 2 Diabetes Using Diabetes PHD

From UPTODATE 2007

"Despite extensive data suggesting large benefits with preventive and treatment strategies, and despite increasing media attention, there has been little improvement in diabetes management" (ref's 53-62)

DM Collaborative Care Team

How will we know that the extra resources that we are directing at the problem is having an positive impact on our patients' risk of complications?



Cochrane DB of Systematic Reviews 2006

- "Interventions to improve the management of diabetes mellitus in primary care, outpatient and community settings"
- Interventions were somewhat effective in improving process outcomes but clinical outcomes were often not measured
- In general there was some evidence that complex interventions were of some benefit
- Reviewing individual studies of interventions does not give resounding evidence of large benefit

Overview

- Usual methods for program evaluation
- Diabetes PHD
- Results of the study using PHD on my patients with type 2 diabetes

Disclaimer

We will not be considering measures of:

- Quality of Life
- Patient Satisfaction

Usual Outcome Measures

Process outcomes
- **BP within 6 mo**
- **HbA1c within 6mo**
- **Lipids annually**
- **Albuminuria annually**
- **Foot exam within 1yr**
- **Eye exam within 1yr**
- **On ACE/ARB**
- **On ASA/antiplatelet**

Clinical outcomes
- **BP < 130/80 mmHg**
- **HbA1c < .07**
- **Lipids LDL < 2.5**

Positive Features

- Include clinical outcomes
- A composite score could indicate whether there is improved adherence to guidelines and whether program interventions have had an impact
- The data for the scores should be relatively easy to extract from computerized EMR

Limitations

- DM is a complex or multifactorial disease
- Improvement in a clinical parameter will have a different degree of benefit in each patient
- Improvements in clinical parameters in the cohort may not confer a concomitant decrease in risk of complications
- Limitations are those related to using guidelines

"Levels of Evidence" of Effectiveness

Process Outcomes
- Regular lab
- Regular BP
- on recommended drugs
- regular eye and foot assessments

Clinical Outcomes
- HbA1c < 7
- Systolic BP < 130
- LDL < 2.5
- BMI < 25
- Waist Circumference

Complication Rate
- Myocardial Infarction
- Stroke
- End Stage Renal Disease
- Retinopathy
- Foot Ulcers/Amputation

Diabetes PHD (beyond guidelines)

- Medical Modelling Program
- Available on ADA website
- Validated
- Gives risk of each DM complication over 30 yrs
- Allows re-calculation of risk with modifiable parameters changed (idealized)

Idealizing Risk

PHD allows us to modify the following parameters and determine the effect of the change on the rate of complications of DM

- Weight
- Systolic BP
- HbA1
- LDL
- Smoking
- Compliance c eye foot exams
- Taking ASA, ACE Inh, BBlockers

Values used to Idealize Their Profile

- Weight if BMI were 25
- LDL 2.56 mmol/L (100 mg /dL)
- HbA1c 7
- SBP 130mm Hg
- Not smoking - yes
- Regular foot exams - yes
- Regular eye exams - yes
- Taking ASA - yes
- Taking BBlockers - yes
- Taking ACE Inhibitors - yes

Risk Reduction Possible (RRP)

- Current calculated risk – Idealized Risk

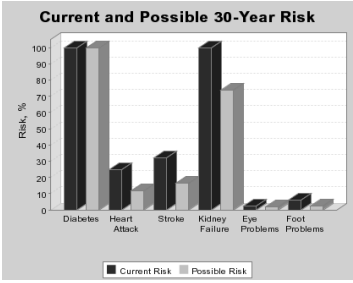
RRP = CCR – IR

- Measure of achievable risk reduction
- IR standardized for comparison but not best possible (in some cases patients would have increased risk reduction by lowering parameters below CDA recommended levels)

Method

- Identify all the patients in my practice with diagnosis of type 2 DM
- Collect all the data required to use Diabetes PHD from the computerized record and during an office visit
- Use PHD to calculate risk of complications of DM
- Idealize the parameters and recalculate the risk
- Calculate the risk reduction possible

Calculated Risks



Risk Reduction Possible

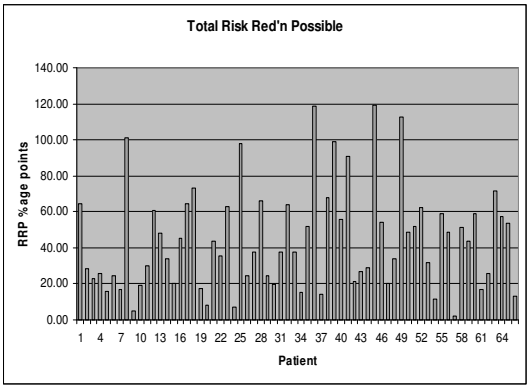
PHD RISK CALCULATIONS
Identifier: Date:

Complication	Calculated Risk	Idealized Risk	Risk Reduction Possible
Myocardial Infarction	24	12	12
Stroke	32	17	15
End Stage Renal Disease	100	74	26
Retinopathy	2	2	0
Foot Ulcers or Amputation	6	3	3

Total Risk Reduction Score 56
Comments:

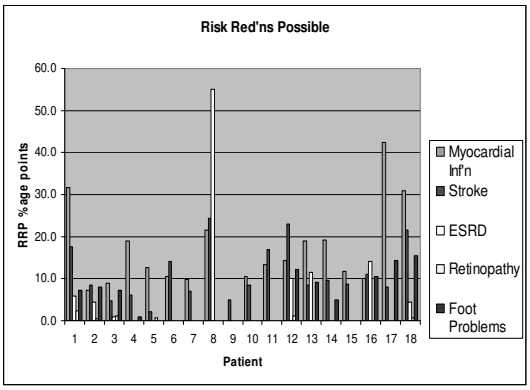
Results

We have data and consents on 65 of 69 patients in my practice who have DM



Average RRP % Points

- PRR MI ➢ 18
- PRR Stroke ➢ 13
- PRR ESRD ➢ 8
- PRR Retinopathy ➢ 0.5
- PRR Foot Problems ➢ 4.2
- Total/Aggregate ➢ 44

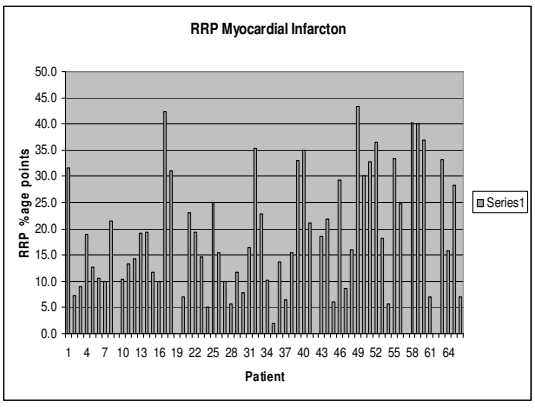


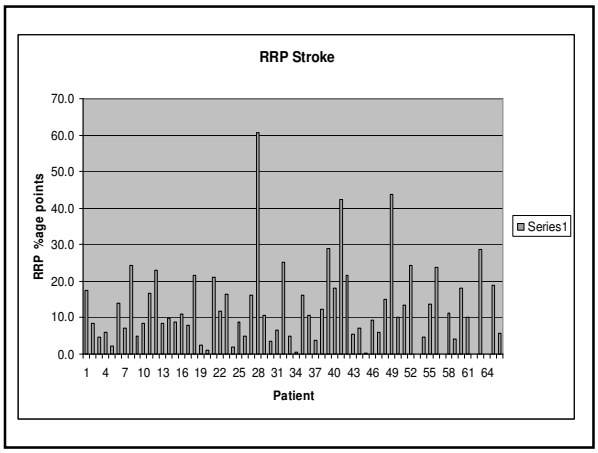
Conclusions

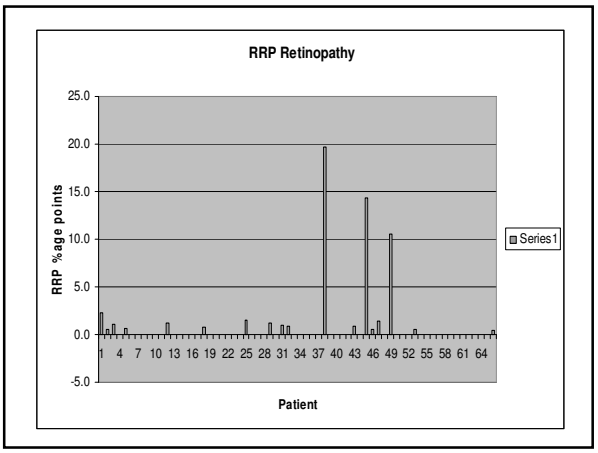
- Using Diabetes PHD for program evaluation is effective
- There is potential for substantial improvement in the risk profile of the patients in my practice
- It is time consuming and would not be adopted by programs if it were not being used as a decision support tool

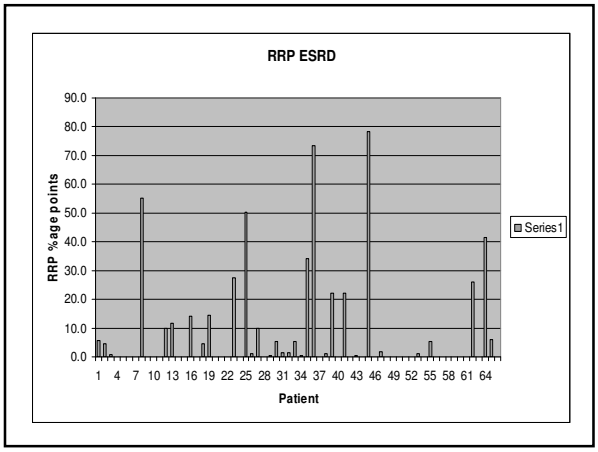
Secondary Benefits

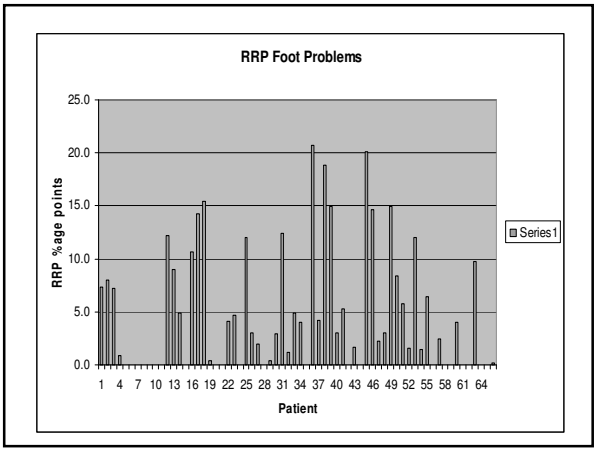
- The DMCCT could also use the data for individual complications to direct resources to areas with the greatest potential benefit
- If it is used as a decision support tool we would expect interventions to be directed to reduction of risk of complications rather than to levels of compliance with guidelines
- Patients seemed to have a better idea of the risks to which they are exposed and we had the impression that they were more engaged and motivated after seeing the results of Diabetes PHD




RRP Stroke
RRP %age points
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
1 4 7 10 13 16 19 22 25 28 31 34 37 40 43 46 49 52 55 58 61 64
Patient
Series1


RRP Retinopathy
RRP %age points
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
1 4 7 10 13 16 19 22 25 28 31 34 37 40 43 46 49 52 55 58 61 64
Patient
Series1


RRP ESRD
RRP %age points
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
1 4 7 10 13 16 19 22 25 28 31 34 37 40 43 46 49 52 55 58 61 64
Patient
Series1


RRP Foot Problems
RRP %age points
25.0
20.0
15.0
10.0
5.0
0.0
1 4 7 10 13 16 19 22 25 28 31 34 37 40 43 46 49 52 55 58 61 64
Patient
Series1