Clinical Safety & Effectiveness
Cohort # 14

Screening Children With Acanthosis Nigricans &/Or Obesity

The Team

- Team Members
  - Fred McCurdy, MD, PhD, MBA, Chief of Pediatrics
  - K. Muralidhara, MD, Pediatrician
  - Bertha Lopez, Su Clinica PI Coordinator
  - Pat Rivera, RD, Diabetic Educator
  - Mary Alonzo, CMT, Laboratory Chief
  - Pat Klase, RN, Chief Nursing Officer
  - Abel Gaona, RN, Charge Nurse, Pediatrics
  - Aurora Garcia, Scheduling Supervisor
  - John Serrano, MSW, Social Services
- Sponsor
  - Lois Bready, MD, Sr. Associate GME Dean

What We Are Trying to Accomplish?

OUR AIM STATEMENT

Increase by 20% the percentage of patients presenting to Su Clinica with acanthosis nigricans/obesity that are correctly "screened" and placed into appropriate management protocols, consistent with current "best evidence" by June 30, 2014.

Background

- What is the problem?
  - At Su Clinica 1369 children have been assessed to have acanthosis nigricans (CPOE) in the past 3 years (majority referred by school)
  - 77 children in just the past 6 months with the same
- Generally accepted children whose BMI >85th percentile for age and are found to have acanthosis nigricans are at high risk to have the precursors of Type 2 diabetes (one or more elements of the "metabolic syndrome")

Background (cont'd)

- Established Guidelines from the American Academy of Pediatrics (AAP) (2007) and the European Association for the Study of Obesity (2010)
- Laboratory assessment should focus on 5 things:
  - Glucose intolerance
  - Dyslipidemia
  - Altered liver function
  - Thyroid dysfunction
  - Nutritional deficiency

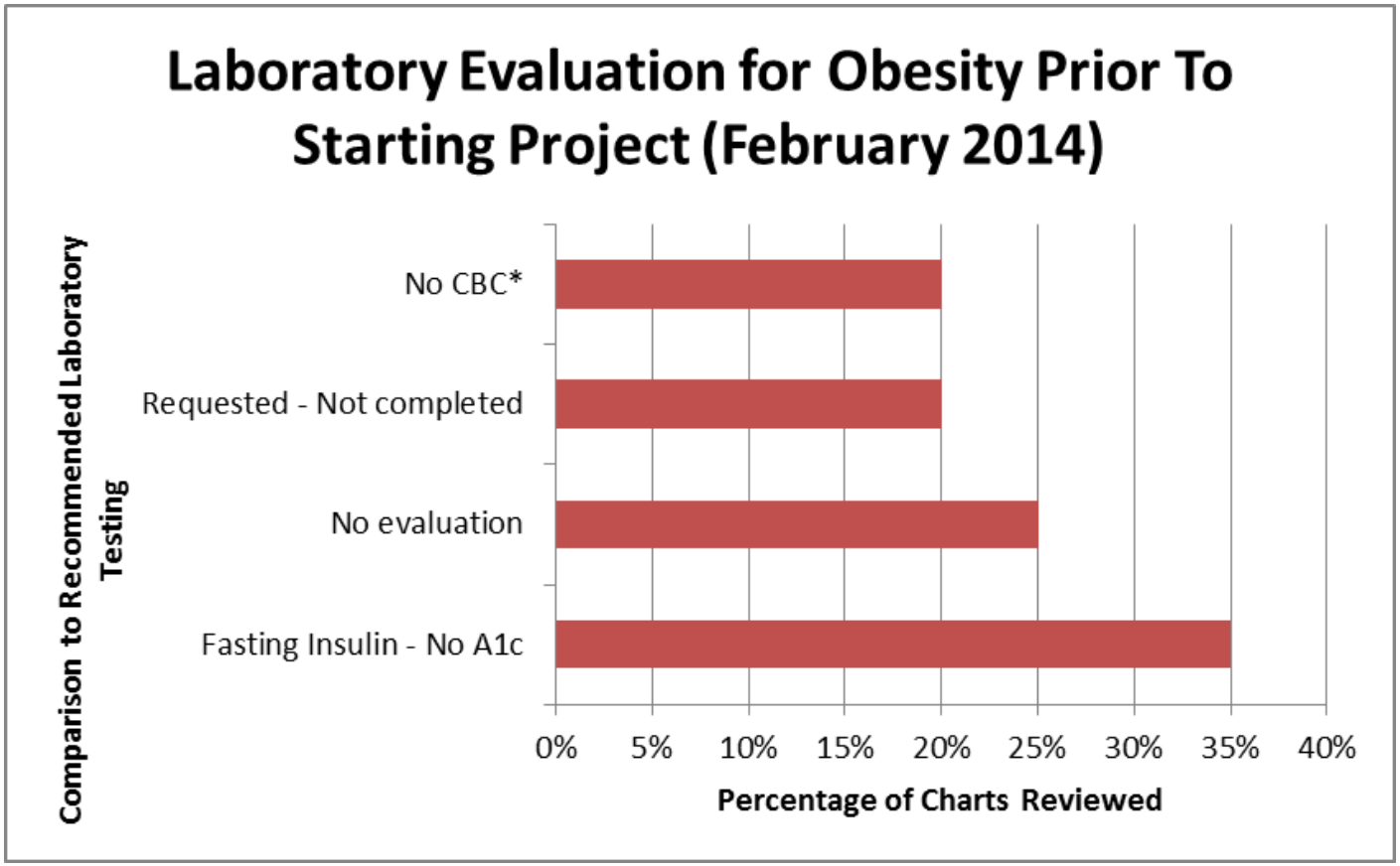
Background (cont'd)

- Given the above:
  - Reviewed charts for laboratory assessment results
    - 20 charts randomly selected and reviewed for lab assessment
    - 4 different outcomes ranging from fasting glucose, fasting insulin, lipid panel, thyroid screen, HgbA1c to no lab assessment
  - Assembled the team
  - Presented results of chart review and the "best evidence" on assessment of children with acanthosis nigricans &/or obesity

Baseline Data - Details

Plan A (all labs fasting)	Plan B (all labs fasting)	Plan C (all labs ordered in future fasting – labs not completed)	Plan D
Glucose	Glucose	Glucose	No evaluation planned
Insulin	Insulin	Insulin	
Lipid Panel	Lipid Panel	Lipid Panel	
Thyroid screen	Thyroid screen	Thyroid screen	
HA1C		HA1C – 3 patients	
No nutrition consult	Nutrition consult – 1 patient	No nutrition consult	
	CBC – 1 patient		

Baseline Data



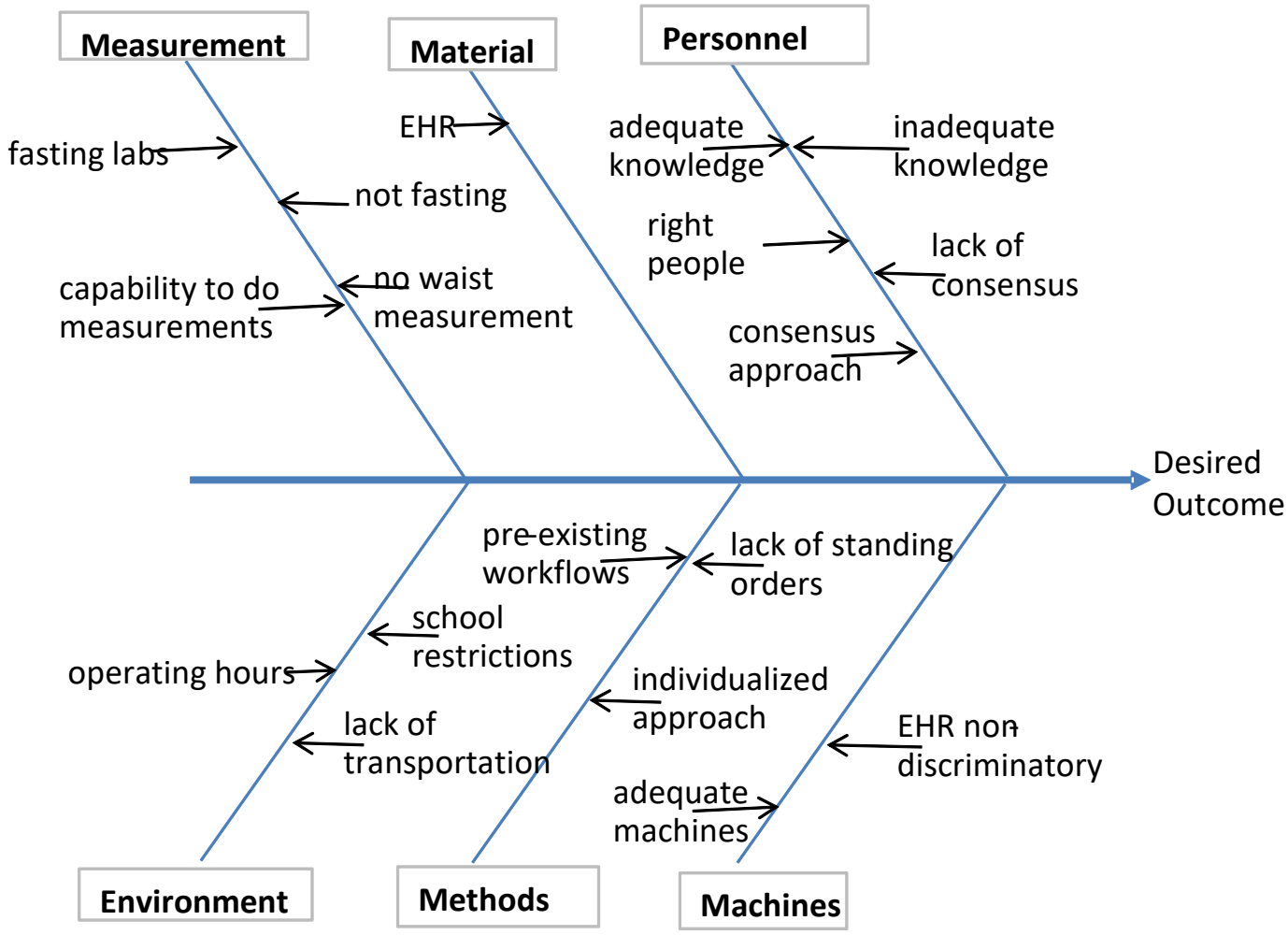
*closet to “best evidence” assessment

Process Analysis

Tools used:

- Check sheet – to collect initial data and to use later in follow-up data collection
- Flowchart – insure team understanding of current practice
- Brainstorming – to capture all of the potential reasons for deviation from the "ideal" workflow
- Fishbone – to better organize the results of the brainstorm

Fish Bone


Measurement
Material
Personnel
fasting labs
not fasting
capability to do measurements
no waist measurement
EHR
adequate knowledge
inadequate knowledge
right people
lack of consensus
consensus approach
Desired Outcome
pre-existing workflows
lack of standing orders
school restrictions
operating hours
individualized approach
lack of transportation
EHR non-discriminatory
adequate machines
Environment
Methods
Machines

Results of Team Deliberations

- Create a consensus plan for the initial assessment of patients referred for acanthosis nigricans evaluation to include:
  - A minimal list of laboratory tests (either fasting or not fasting)
- Create a workflow for how these patients gain access to the clinic as well as how they progress through the evaluation
- Create a set of standing orders that could assist the providers in getting the assessment completed

Project Plan

- April 16 - Pediatric meeting (gain consensus)
  - present draft of initial plan (draft workflow and standing orders) to Quality Council same day
- April 18 - meet with IT and laboratory supervisor to change EHR template
- April 18 - Finalize workflow and standing orders
- April 21 – Workflow/standing orders to Pediatric Department
- Arrange with IT to "pull" charts on a rolling basis
- May 1 - begin data collection
- June 30 - Stop data collection, compile results
- July 16 - Present the results to Pediatric Department

Getting Consensus

Additional tools selected to make decisions about changes to the screening process:

- Literature review with the group
- Nominal Group Technique – group voting
  - Ballot distributed and results tabulated
- Personal Sales

Measuring Change

- Measures to be used to see if changes resulted in improvement:
  - Chart review from the EHR
  - Was the consensus laboratory assessment accomplished? –Yes or No

Modified Project Plan

- Shorten the timeline for data collection to end May 31
- Difficulties in getting consensus after 1st meeting
  - Continued disagreement on the part of a few
  - Non-participation of a few
- Assembled group again and presented financial information (April 21)
- Spent time individually "selling" the concept
- >2/3 agreed to the plan
- Changed EHR template on May 1

Cost Comparison - Current

COSTS FOR LABORATORY ASSESSMENT OF CHILDREN WITH OBESITY - CURRENT

Test	Bundle	Test	Individual	Combined	Cost
Fasting CMP	$1.95	Fasting Glucose	$1.65		
		ALT	$1.65	$4.95	
		AST	$1.65		
Lipid profile	$1.90	Cholesterol	$1.65		
		Triglyceride	$1.75	$5.55	
		HDL	$2.15		
Fasting Insulin	$6.25	Fasting Insulin	$6.25		
Hemoglobin A1c	$3.50	Hemoglobin A1c	$3.50		
Thyroid screen	$5.35	TSH	$3.15		
		T4	$2.05	$7.20	
		T3	$2.00		
Total Bundle Cost	$18.95	**Total Individual Cost**	$27.45		$8.50

Cost Comparison – Best Evidence

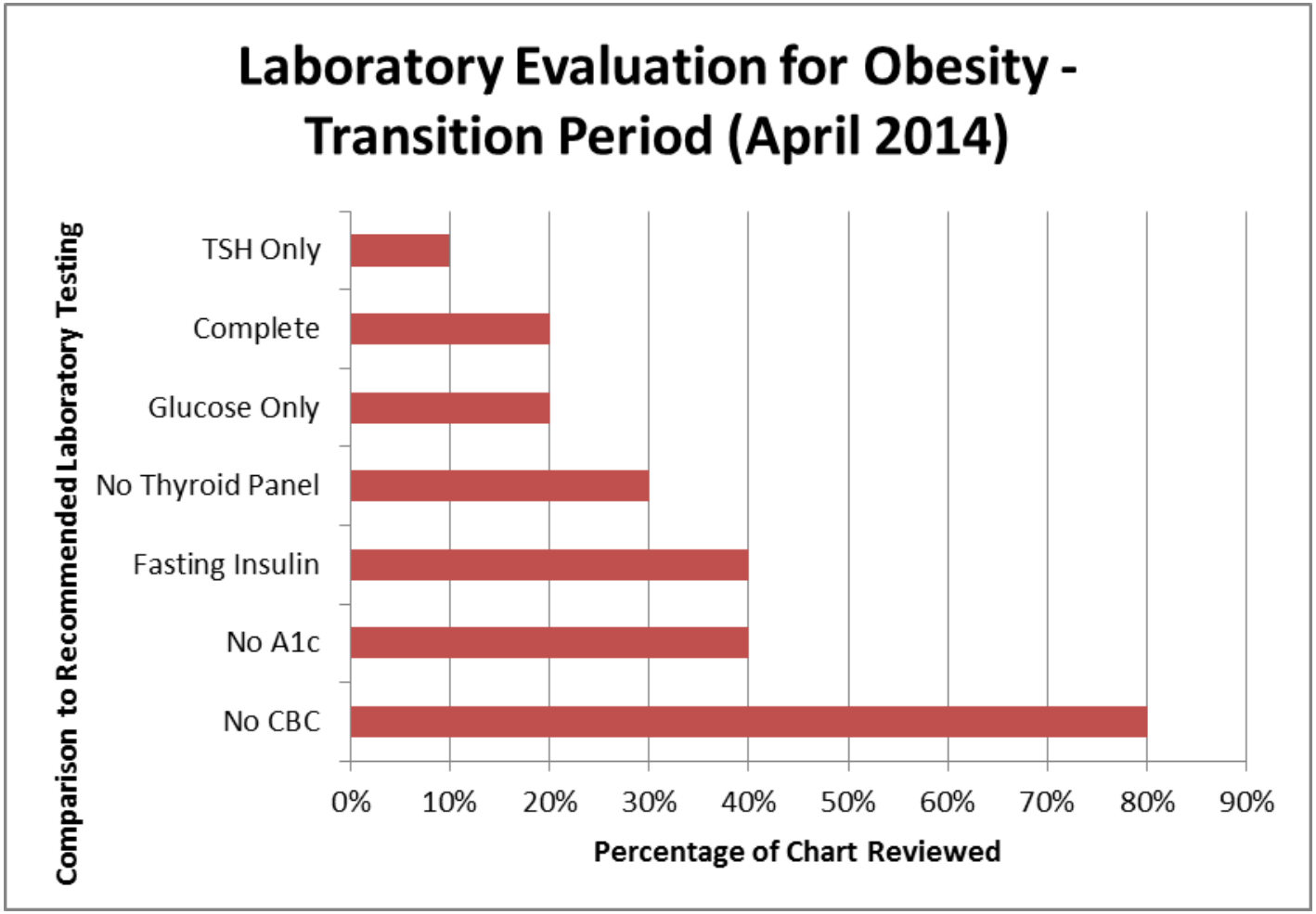
COSTS FOR LABORATORY ASSESSMENT OF CHILDREN WITH OBESITY - IDEAL BASED ON CURRENT BEST EVIDENCE

Test	Bundle Cost	Test	Individual Cost	Combined Indivdual Cost	Cost Savings/ Patient
Fasting CMP	$1.95	Fasting Glucose	$1.65		
		ALT	$1.65	$4.95	
		AST	$1.65		
Lipid profile	$1.90	Cholesterol	$1.65		
		Triglyceride	$1.75	$5.55	
		HDL	$2.15		
Hemoglobin A1c	$3.50	Hemoglobin A1c	$3.50		
Thyroid screen	$5.35	TSH	$3.15		
		T4	$2.05	$7.20	
		T3	$2.00		
CBC	$2.02	CBC	$2.02		
Total Bundle Cost	$14.72	**Total Individual Cost**	$23.22		$8.50

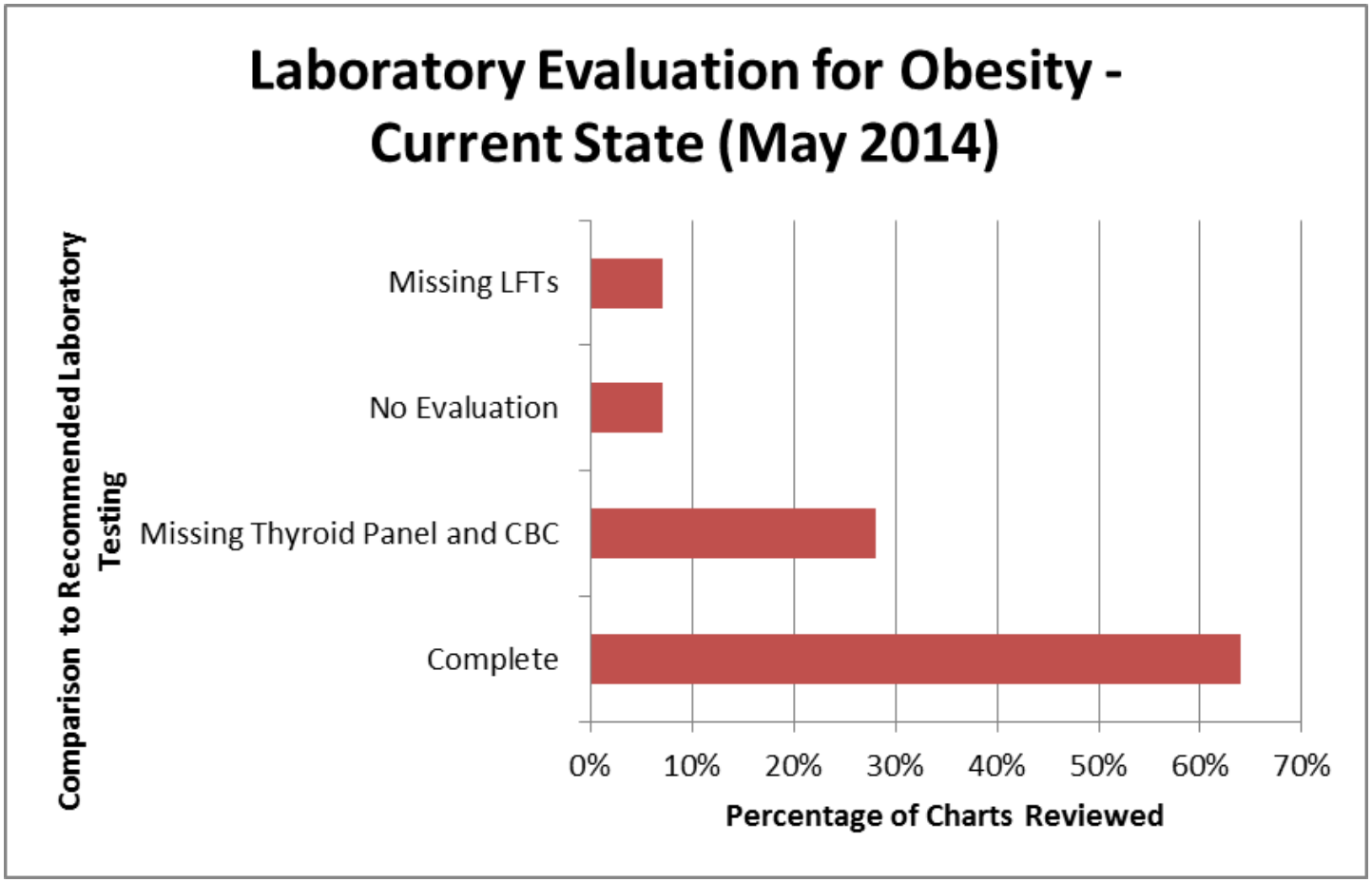
Cost Considerations

- Look at what is currently being spent using the current panel of tests - $18.95
- Look at what each test individually costs and consider what the clinic has to spend when you select individual tests rather than panels
- Look at what current "best evidence" costs - $14.72
- Again, consider what individual tests cost the clinic rather than selecting the "best evidence" panel
- Consider also that the only test that must be done fasting is the glucose

Results


Laboratory Evaluation for Obesity - Transition Period (April 2014)
Comparison to Recommended Laboratory Testing
TSH Only
Complete
Glucose Only
No Thyroid Panel
Fasting Insulin
No A1c
No CBC
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
Percentage of Chart Reviewed

Results


Laboratory Evaluation for Obesity - Current State (May 2014)
Comparison to Recommended Laboratory Testing
Missing LFTs
No Evaluation
Missing Thyroid Panel and CBC
Complete
0%
10%
20%
30%
40%
50%
60%
70%
Percentage of Charts Reviewed

Return On Investment (not really ROI)

- $ previously spent per patient varied from $0 - $18.95 with average cost/patient of $15.50 (fasting insulin rather than A1c) was:
  - $15.50 X 1359 patients = $21,064.50 over past 3 years
- $ that could have been saved using "best evidence" would have been:
  - $15.50 - $14.72 = $0.78
  - $0.78 X 1359 = $1,060.02 over same 3 years (**minimum estimated savings**)
- Does not take into account these "costs":
  - Re-work in patients that required multiple visits to finish screening
  - Patients lost to appropriate follow-up
  - Patients treated for Type 2 diabetes with only high fasting insulin
  - Patients referred to subspecialists for further evaluation (?)

Conclusion/What's Next

- Preliminary discussions about next steps:
  - Continue to collect data
  - Standardize our initial approach
  - Create standing orders for the initial assessment of acanthosis nigricans patients
  - Redesign workflows in the clinic
  - Create an "obesity task force" to make further recommendations to the group
  - Use the results of this project to encourage greater collaboration and build a "culture of inquiry"

Thank you.

Questions?

Gracias.

Preguntas?