

CHAD

Community Health Awareness of Diabetes

An initiative of the Kidney Foundation of Canada
and the Department of Family Medicine, McMaster University

A diabetes risk assessment program in Grimsby,
Ontario

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Rationale for CHAD

- Diagnosed vs. undiagnosed T2DM prevalence in Canada
- Early detection can prevent/delay onset of DM
- CDA guidelines 2008
- Screening in family practice:
 - opportunistic vs.
 - everyone over 40 vs.
 - targeted approach
- Needs assessment of Grimsby Family drs (n=17)
 - 82% (n=14) agreed with the guidelines that all over 40 year olds should be screened for diabetes
 - 41% (n=7) said that they routinely screened patients over 40

Choice of diabetes screening methods in the community

How do we screen for diabetes in the community?

- Laboratory testing
 - Gold standard, expensive, complex, cut-offs
- Near-patient testing
 - Less accurate, can be costly, low sensitivities
- Diabetes Risk Scores
 - Cheap, administer anywhere, can have acceptable sensitivity and specificity (Finnish: sn 78%, sp 77%)
- Combination methods
 - Combine low cost techniques, applicable in the community, ? better sensitivity and specificity (needs more research)

Grimsby and West Lincoln area demographics*

- Mid-size bedroom community in Ontario
- Population total 33,565
- Age distribution 36.9 % > 45 yrs
n= 12,390
median age 39
- Economic status 84.3% home ownership
\$27,573 median income
cf. Ontario 67.9% and \$24,816
- Gender 48.7% males
- Ethnic minorities 1.9%

*Statistics Canada. 2002. 2001 Community Profiles. Released June 27, 2002. Last modified: 2005-11-30. Statistics Canada Catalogue no. 93F0053XIE.

Estimated prevalence of diabetes in Ontario*

Known DM:	45-64yrs	6.9%
	>65yrs	14.6%
Undiagnosed DM:	45-64yrs,	3.5-6.9%
	>65yrs	7.3-14.6%
(assuming up to 1/2 of DM undiagnosed)		
Total DM:	45-64yrs	up to 14%
	>65yrs	up to 30%

**From 2005 CCHS survey cycle 3.1 (StatsCan)*

Details of the CHAD program 1:

- ***Location:*** selected local pharmacies in Grimsby, Beamsville, Smithville and Vineland (Ontario, Canada)
- ***Timing:*** sessions took place 2 days a week for 10 weeks and lasted 3 hrs each
- ***Participants:*** any resident aged > 40 years
- ***Session requirements:*** participants were asked to fast for 8 hours prior to coming
- ***Raising awareness:*** extensive community advertising (local paper, radio, tv) took place, drop-ins welcome, some invited (n = 4860) by a personal letter from their family doctor

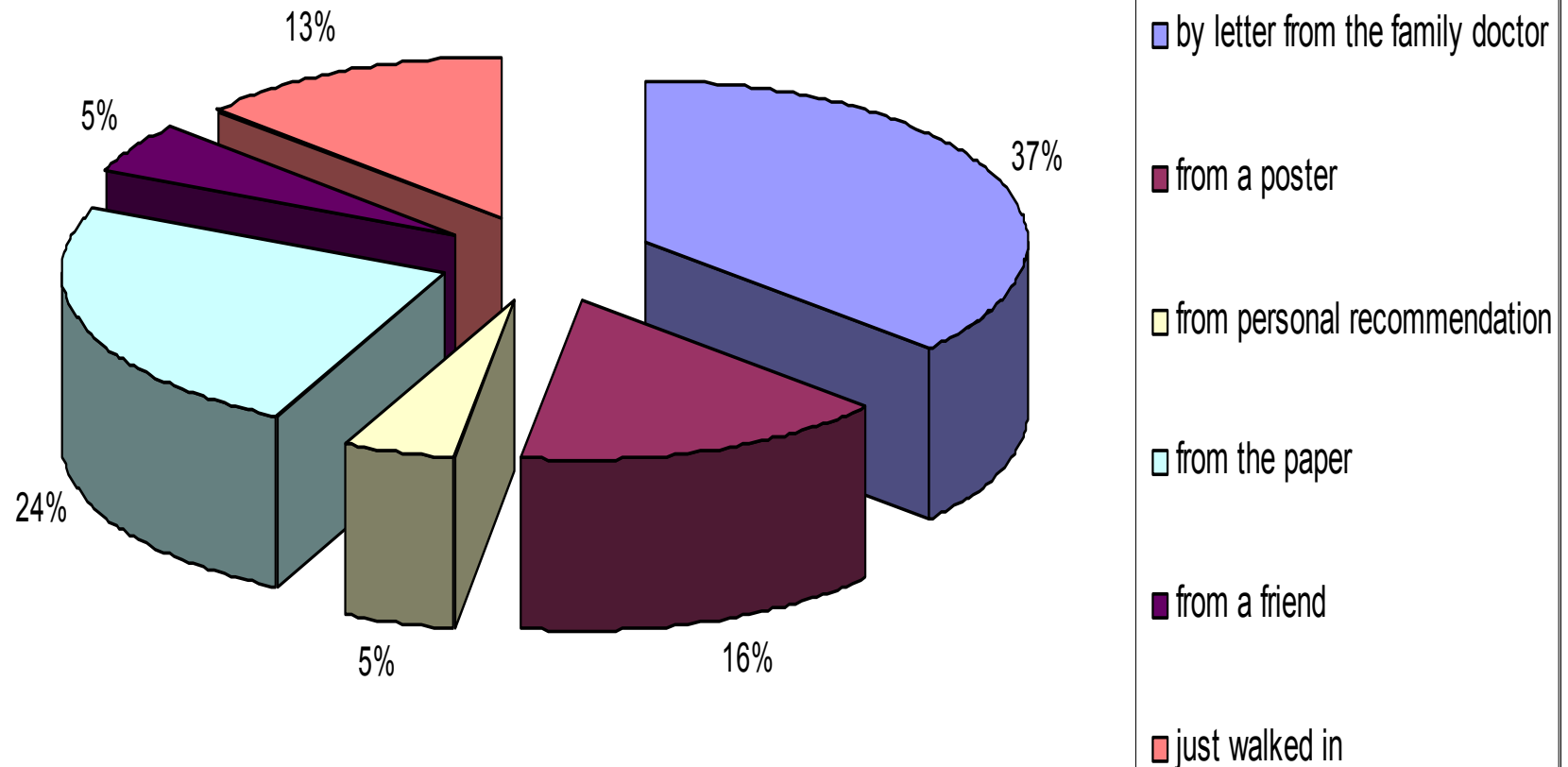
Details of the CHAD program 2:

- **Sessions:** staffed by volunteer members of the public, trained (by a public health nurse)
- **Risk Assessment:** Finnish Diabetes Risk score + capillary blood glucose+ HbA1c at 5 selected local pharmacies
- **Results:** individual assessments of 'Risk of Diabetes' given to each participant also sent to their local family doctors
- **Education/Counselling:** for those identified as being at high risk for diabetes
- **Emergency:** any results of Capillary Blood Glucose >15 mmol/l were faxed to family doctors immediately and a public health nurse attended the patient

Attendance

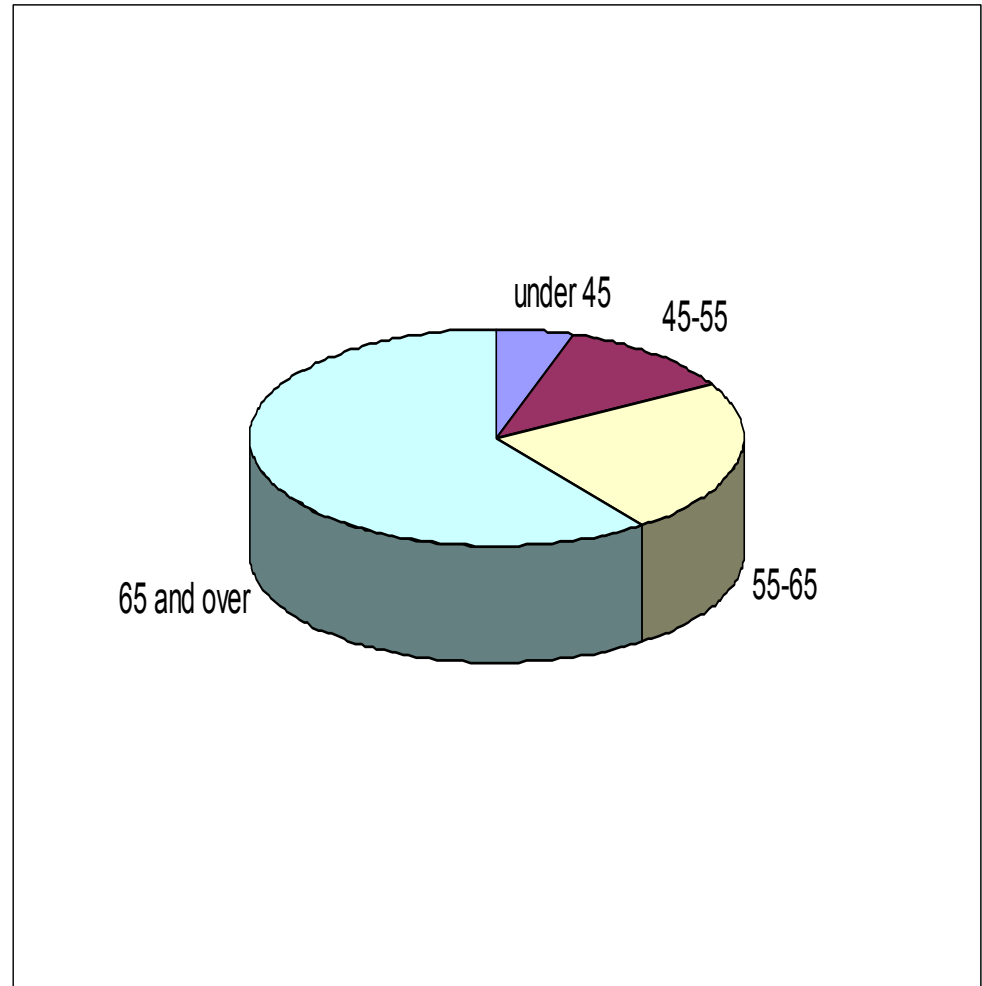
- 62 risk sessions each 3 hrs long were provided in 5 pharmacies, over 10 winter/spring weeks
- 911 visits in total
(587 came once, 242 twice, 37 three times)
 - BP checks, fasting glucose checks
- 587 people attended the program
 - 4% of eligible population in the Grimsby/West Lincoln area (over 40 year olds)
 - 12% of all personally invited

How did people hear about the program?



Demographics of attendees

- 67% were female
- 33% were male
- 88% (n=508) of attendees (n=587) did not have pre-existing diabetes



Which individuals were identified as 'at risk' for diabetes by the CHAD program?

- 17% of participants without diabetes identified as high risk for diabetes (n = 86/508)
- On basis of blood tests and risk scoring questionnaire
- The CHAD composite diabetes risk of 'at risk' was determined with the following algorithm:
- Fasting CBG > 6.1mmol/l OR
- Finnish Diabetes Score >15 OR
- Finnish Diabetes Score >7 AND Cambridge Score >0.199
- these people had reports sent to their family doctors to suggest further screening and diagnosis of diabetes

Performance of different risk assessment tests

Screening test	At Risk CHAD attendee % (n=84)	Not at Risk CHAD attendee % (N=442)	Chi squared test p value
HbA1c measurement > 0.63	15.5 (13)	0.5 (2)	<0.00*
Capillary blood glucose measurement > 6.1mmol/l	95.2 (80)	0.00 (0)	<0.00*
High Cambridge risk score > 0.199	79.8 (67)	51.0 (221)	<0.00*
High Finnish Diabetes Risk score >15	28.6 (24)	10.9 (47)	<0.00*

Demographics of those 'at risk' vs. 'not at risk' of diabetes

% (n)	At Risk CHAD attendee	Not at Risk CHAD attendee	Chi squared test p value
Age (n=517)^{\$}	N= (84)	N=(433)	0.025*
45-54	8.3 (7)	13.4 (54)	
55-64	28.6 (24)	18.5 (80)	
Over 64	59.5 (50)	56.1 (243)	
Under 45	3.6 (3)	5.5 (24)	
Male (n=197)	38.8 (41)	36.0 (156)	0.027*

Comparison of relevant modifiable RF between 'at risk' for DM and not at risk

Modifiable RF	At risk % (n, N=84)	Not at Risk % (n, N= 442)	Chi Sq. P value
<i>Overweight (BMI >25kg/m²)</i>	77 (61)	62 (245)	0.012*
<i>Physically active for 30 mins/ day</i>	14 (74)	83 (330)	0.024*
<i>On BP medication</i>	54.8 (46)	33.3 (144)	<0.000*
<i>Does not take BP meds regularly</i>	44.0 (37)	65.6 (284)	<0.000*
<i>Mean systolic BP (taken at risk assessment session) Mean (SD)</i>	140.37 (21.639)	134.97 (21.516)	0.037* (F test, p value)
<i>High or Moderate fat/ fast food consumption</i>	45.8 (38)	30.3 (128)	0.006*
<i>High/Moderate salt intake</i>	45.2 (38)	32.1 (135)	0.021*
Smoking	2.4 (2)	8.6 (36)	0.140
Cholesterol	51.2 (42)	40.0 (163)	0.061
Low vegetable consumption	9.8 (8)	5.3 (21)	0.121

Comparison of non-modifiable RF between 'at risk' for DM and not at risk

Non-Modifiable Factors	At risk % (n, N=84)	Not at Risk % (n, N= 442)	Chi Sq. P value
Told that they have diabetes or sugar in past	7.1 (6)	3.2 (13)	0.083
Heart attack, Stroke or TIA in past	14.3 (12)	9.2 (39)	0.161
Ethnic origin (non-white)	1.2 (1)	1.4 (6)	0.154

How did the participants feel about the program?

- 204 participants (38%) completed a questionnaire immediately after a session
- 90% thought fasting before the session was easy
- 96% found clinic locations easy

Participant satisfaction

Question	Actual mean scores	SD
I need to be screened for diabetes	2.85	1.52
My Doctor needs to be informed of my risk for diabetes	3.39	1.66
Fasting before was easy	4.66	.83
Location of clinics was convenient	4.87	.54
The blood test was easy to administer on myself	4.57	.98
The blood test was not too painful for me to have undergone	1.37	1.12
The volunteer was invaluable	4.46	1.15
The risk assessment process was very worthwhile	4.79	.60
I will change my lifestyle as a result of the risk assessment procedure	3.59	1.38
I will go to the family doctor to discuss my results	4.00	1.46
The risk assessment helped me to understand my risk of developing diabetes	4.29	1.07
Overall, I was satisfied with the risk assessment process	4.84	0.52
<i>TOTAL SCORE from 12 questions above (maximum of 60)</i>	50.95	6.69

Blood testing

- Participants were told to fast for 8 hours prior to attending → potential problem!
- 20% of all visits were NOT fasting (though some may have been repeat visits for BP)
- Glucose readings were not collected for 38% of participants

Challenges encountered through CHAD

- Incomplete risk assessments
- Waist circumferences- completed in 25-33%
- People with existing DM coming – 12%
- Family drs names given inaccurately
- Space for the program
- Fasting/CBG
- Cost of blood test

Location/timing of attendance

- Attendance greatest for weekday clinics
- Attendance poor for Saturday clinics (only 4%)
 - Younger population of 40-65 yr olds?
 - Fasting vs. non fasting?
- Plaza location especially popular
 - ?due to readily available free parking - 51% of all attendees came here

Volunteers' Perspectives

Physician Perspectives

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- Only 5% found helping participants through the blood tests difficult
 - 95% thought a morning timing was the most appropriate time for a session
 - 91% found volunteering worthwhile
 - 43% said they would change their own lifestyle as a result of being aware of the risk factors for diabetes
- 76% (n=12) found the risk assessment score useful

Concluding thoughts

Worthwhile program

Needs modification according to local resources