Diabetes Mellitus Annual Physical Reviews (Dec 2010)

Clinical Audit

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CT3 Team 4,
AIMS OF AUDIT

- To Audit the care provided to Patients with Diabetics mellitus at XXX unit>

- To compare the current practice at Caswell Clinic with the set standard by NICE

- To highlight any deficiencies in the current practice

- To suggest changes to the current practice
Diabetes Mellitus

- Diabetes Mellitus is a heterogeneous collection of disorders unified by a state of diminished insulin action which may result from:
  - decreased insulin secretion
  - a reduction in the effectiveness of secreted insulin
  - a combination of the above

- Diabetes mellitus, irrespective of its aetiology, is characterised by hyperglycaemia and is defined in terms of plasma glucose levels
TYPES OF DIABETES MELLITUS

- Type 1 Diabetes (rapid onset, often in childhood, insulin-dependent, ketoacidosis if neglected)

- Type 2 Diabetes (insulin insensitivity plus a failure of pancreatic insulin secretion)

- Gestational Diabetes (diabetes of pregnancy).
**DIAGNOSIS OF DIABETES**

- Diabetes is diagnosed on the basis of history
- Polyuria, Polydipsia and unexplained weight loss
  - Plus
    - a random venous plasma glucose concentration >= 11.1 mmol/l
    - OR a fasting plasma glucose concentration >= 7.0 mmol/l (whole blood >= 6.1 mmol/l)
    - OR 2 hour plasma glucose concentration >= 11.1 mmol/l
      2 hours after 75g anhydrous glucose in an oral glucose tolerance test (OGTT)
COMPLICATIONS OF DIABETES

- Diabetic nephropathy
- Diabetic eye disease
- Diabetic neuropathy
- Ischemic heart disease
- Cerebrovascular disease
- Peripheral vascular disease
- Diabetic foot
- Cutaneous manifestations of diabetes
## Prevalence of Doctor-Diagnosed Diabetes (2003) in UK

<table>
<thead>
<tr>
<th></th>
<th>Men (≥55 years)</th>
<th>Women (≥55 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General population (%)</td>
<td>4.3</td>
<td>3.4</td>
</tr>
<tr>
<td>Black Caribbean</td>
<td>10.0</td>
<td>8.4</td>
</tr>
<tr>
<td>Black African</td>
<td>5.0</td>
<td>2.1</td>
</tr>
<tr>
<td>Indian</td>
<td>10.1</td>
<td>5.9</td>
</tr>
<tr>
<td>Pakistani</td>
<td>7.3</td>
<td>8.6</td>
</tr>
<tr>
<td>Bangladeshi</td>
<td>8.2</td>
<td>5.2</td>
</tr>
<tr>
<td>Chinese</td>
<td>3.8</td>
<td>3.3</td>
</tr>
<tr>
<td>Irish</td>
<td>3.6</td>
<td>2.3</td>
</tr>
</tbody>
</table>
RISK OF DEVELOPING DIABETES IN PATIENTS ON ANTIPSYCHOTICS

- In general atypical antipsychotics increase risk
  - Olanzapine and Clozapine
  - First generation antipsychotics (53% more likely)
  - Second generation antipsychotics (32% more likely)
<table>
<thead>
<tr>
<th>Antipsychotic</th>
<th>n</th>
<th>Age at first prescription Years: median (25--75%)</th>
<th>Female gender, %</th>
<th>Antipsychotic drug-naive RR (95% CI)</th>
<th>Antipsychotic combined RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zuclopenthixol</td>
<td>57 065</td>
<td>65.0 (41.9--82.3)</td>
<td>59.1</td>
<td>1.40 (1.30--1.50)</td>
<td>1.40 (1.33--1.47)</td>
</tr>
<tr>
<td>Perphenazine</td>
<td>21 473</td>
<td>50.0 (36.4--68.2)</td>
<td>56.5</td>
<td>1.60 (1.45--1.77)</td>
<td>1.57 (1.48--1.67)</td>
</tr>
<tr>
<td>Haloperidol</td>
<td>27 872</td>
<td>72.2 (54.6--82.3)</td>
<td>56.6</td>
<td>1.32 (1.17--1.49)</td>
<td>1.17 (1.08--1.26)</td>
</tr>
<tr>
<td>Clozapine</td>
<td>6014</td>
<td>41.1 (30.1--58.7)</td>
<td>43.5</td>
<td>1.29 (0.98--1.70)</td>
<td>1.45 (1.28--1.64)</td>
</tr>
<tr>
<td>Olanzapine</td>
<td>42 408</td>
<td>46.7 (32.3--69.5)</td>
<td>52.3</td>
<td>1.35 (1.18--1.54)</td>
<td>1.29 (1.20--1.37)</td>
</tr>
<tr>
<td>Risperidone</td>
<td>44 110</td>
<td>54.8 (33.0--78.5)</td>
<td>57.1</td>
<td>1.24 (1.09--1.40)</td>
<td>1.23 (1.15--1.32)</td>
</tr>
<tr>
<td>Ziprasidone</td>
<td>5950</td>
<td>32.7 (24.1--43.3)</td>
<td>60.4</td>
<td>3.09 (1.54--6.17)</td>
<td>1.94 (1.62--2.31)</td>
</tr>
<tr>
<td>Sertindole</td>
<td>371</td>
<td>34.1 (27.2--42.6)</td>
<td>53.1</td>
<td>9.53 (1.34--67.63)</td>
<td>1.94 (1.32--2.84)</td>
</tr>
<tr>
<td>Amisulpride</td>
<td>882</td>
<td>33.4 (24.9--43.5)</td>
<td>47.7</td>
<td>1.72 (0.24--12.23)</td>
<td>1.42 (0.88--2.30)</td>
</tr>
<tr>
<td>Quetiapine</td>
<td>12 402</td>
<td>42.3 (28.3--68.0)</td>
<td>57.9</td>
<td>0.71 (0.43--1.18)</td>
<td>1.15 (0.99--1.34)</td>
</tr>
<tr>
<td>Aripiprazole</td>
<td>4523</td>
<td>31.3 (23.3--41.5)</td>
<td>51.3</td>
<td>1.99 (0.50--7.97)</td>
<td>1.16 (0.83--1.62)</td>
</tr>
</tbody>
</table>

a. Adjusted for gender, age, calendar period and use of lithium or anticonvulsants. Results in bold are statistically significant.
WHY DIABETES WITH ANTIPSYCHOTICS

- Not fully understood
- Weight gain, especially clozapine and olanzapine
  - risk of developing diabetes was independent of weight gain
- Drugs may aggravate the insulin resistance
WHY DIABETES WITH ANTIPSYCHOTICS

Source: Br J Diabetes Vasc Dis © 2004 Sherbourne Gibbs, Ltd.
WEIGHT GAIN

- Up to 80% of individuals being treated with antipsychotics suffer from medication-induced weight gain.  
  - (Gen Hosp Psychiatry 2000)

- Young people experiencing a first episode of psychosis are particularly susceptible  
  - (Br J Psychiatry 2005)
OTHER PROPOSED MECHANISMS

- Specific serotonin receptor subtypes are known to affect glucose homeostasis
- Blockade of pancreatic beta-cell 5-HT [1A] receptors
- Alpha 2 adrenergic inhibition of insulin release
COMING BACK TO AUDIT
AUDIT GUIDELINES USED

- NICE: The management of type 2 diabetes
  - Clinical guidelines CG66 (May 2008)

- NICE: Type 2 diabetes: prevention and management of foot problems
  - Clinical guidelines CG10 (January 2004)
AUDIT FOCUS

- Annual physical reviews of patients with diagnosis of Diabetes mellitus
- 7 standards taken from the current NICE guidelines
- Standards were expected for all patients in primary care under care of GP
METHODS

- Retrospective audit, to examine care given in last one year
- Interviewed all eight patients.
- Data collected from computer system for pathological results
- Also patient`s notes and physical health care records examined
AUDIT: IDENTIFICATION OF THE PATIENTS

- All current inpatients with Diagnosis Diabetes mellitus were identified.
- Total number of patients 8
### Distribution of Patients on Clinic

<table>
<thead>
<tr>
<th>Ward</th>
<th>Number of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>2</td>
</tr>
<tr>
<td>D</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Team</th>
<th>Number of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team 1</td>
<td>1</td>
</tr>
<tr>
<td>Team 2</td>
<td>1</td>
</tr>
<tr>
<td>Team 3</td>
<td>1</td>
</tr>
<tr>
<td>Team 4</td>
<td>2</td>
</tr>
<tr>
<td>Team 5</td>
<td>3</td>
</tr>
</tbody>
</table>
Diabetic Patients

- Mean Age: 39 years (63 years- 29 years)
- 5 out of eight on Clozapine
  - One patient`s Clozapine recently stopped
- 3 out of 8 has been in XXX unit less then a year
- All Patients have diagnosis of Diabetics for more then a year (self reported)
STANDARDS AUDITED

1. Nutritional Advice
2. HBA1c to be checked every 6 months
3. Blood pressure measured at least annually
4. Lipid profile to be checked annually
5. Renal functions to be checked annually
6. Eye screening for diabetic changes to be done annually
7. Foot checks to be done annually.
1. **Nutritional Advice**

- Patients should receive nutritional advice from a healthcare professional with expertise and competencies in nutrition.
- Self reported by the patients if they have or have not received nutritional advice by staff.
RESULTS: NUTRITIONAL ADVICE

- 7 out of 8 patients was given advice
2. HBA1c

- to be checked every 6 months
- Glycated haemoglobin
  - Indicates blood glucose levels for the previous two to three months
  - HbA1c target is below 6.5 per cent
- PIMSplus computer system for pathological results was used to look into blood test results for last one year.
Results: HBA1c

- Only 3 of out 8 had results on the system for 6 monthly checks
- 7 out of 8 had HBA1c done in last one year
- The results may not be available because 3 patients were caswell less then a year.
3. BLOOD PRESSURE

- To be checked annually for patients who are not known to have hypertension.
- Physical health care records on the wards were checked for each patient.
RESULTS: BLOOD PRESSURE MEASURED

- All 8 patients had their blood pressure checked in last one year
4. **LIPID PROFILE**

- To be checked annually
- PIMSplus system for pathology checked for each patient
RESULTS: LIPID PROFILE

- All 8 patients had their lipid profiles checked in last one year
5. **RENAL FUNCTION**

- To be checked annually
  - Albumin:creatinine ratio (ACR) estimate on first pass urine
  - GFR estimate
  - Serum creatinine measurements

- PIMSplus system for pathology checked for each patients
RESULTS: RENAL FUNCTION

- Urea, electrolytes and Creatinine were checked for all 8 patients in last one year
- No records for the GFR checks or Albumin:creatinine ratio (ACR) checks for any patients
  - First urine sample of the day required for Albumin:creatinine ratio (ACR).
  - eGFR can be requested while sending U&Es
6. **Eye Screening**

- Eye screening should be done annually
- Self report taken from patients for their eye tests in last one year
RESULTS: EYE SCREENING

- 4 out of 8 patients said they had their eye tested for purpose of diabetics in last year
  - One had a routine eye test
  - One had eye tested in diabetic secondary care clinic
  - One had eye test at Ashworth hospital
  - One had eye tested in Llanarth Court Hospital
7. Foot Checks

- Annual foot checks
  - Checking for any ulcers
  - Testing for foot sensation
  - Palpation of foot pulses
  - Inspection of foot deformity and footwear

- Self report taken from patients
RESULTS: FOOT CHECKS

- 5 out of 8 patients said they have seen Chiropodist/podiatrist in last one year
- 3 of them had no foot checks
RECOMMENDATIONS

1. Arrangements for annual reviews of feet with Chiropodist trained in diabetic foot examination or reviews by junior doctors.
2. Annual review of eyes with specialist services
3. Annual renal functions to be checked according to NICE standards
4. Improve testing for HBA1c
5. To consideration for a special care plan for Diabetic patients
6. To considering liaising with secondary care services or some arrangements with primary care services
7. Re audit
DIABETIC RETINOPATHY SCREENING SERVICE FOR WALES (DRSSW)

- Commissioned by the Welsh Assembly Government in July 2002
- Every person who has diabetes and is registered with a GP in Wales
- Mobile units with cameras on board visit sites in each Local Health Board area
Diabetic Retinopathy Screening Service for Wales
1 Fairway Court
Upper Boat
Treforest
Rhondda Cynon Taff
CF37 5UB

Tel: 01443 844244
Fax: 01443 843873

http://www.wales.nhs.uk/sitesplus/864/page/42582
THANK YOU
ANY QUESTIONS?