**Table 1:** Adjusted IRRs for summary infection groups during 2010-5 by mean HbA1c level during 2008-9, with patients without diabetes as reference group

|  |  |  |  |
| --- | --- | --- | --- |
| Outcome | Non-DM | DM vs. non-DMa | Mean HbA1c (2008-9) in DM vs. non-DM patientsb |
|  |  |  |  **<6%****<42 mmol/mol** | **≥6 to <7%****≥42-<53 mmol/mol** | **≥7 to <8%****≥53-<64 mmol/mol** | **≥8 to <9%****≥64-<75 mmol/mol** | **≥9 to <10%****≥75-<86 mmol/mol** | **≥10 to <11%****≥86-<97 mmol/mol** | **≥11%****≥97 mmol/mol** |
|  | **IRRc,** 95% CI | **IRRc,** 95% CI | **IRRc,** 95% CI | **IRRc,** 95% CI | **IRRc,** 95% CI | **IRRc,** 95% CI | **IRRc,** 95% CI | **IRRc,** 95% CI | **IRRc,** 95% CI |
| All diabetes (n=85,312)  |  |  |  |  |  |  |  |  |  |
|  Any plus prescription | **1** (reference) | **1.31** (1.30-1.33) | **1.23** (1.18-1.29) | **1.20** (1.18-1.22) | **1.28** (1.25-1.30) | **1.42** (1.39-1.46) | **1.56** (1.50-1.62) | **1.62** (1.53-1.72) | **1.80** (1.70-1.90) |
| Any as hospitalisation | **1** (reference) | **1.78** (1.72-1.84) | **1.65** (1.54-1.76) | **1.41** (1.36-1.47) | **1.58** (1.52-1.65) | **2.02** (1.91-2.13) | **2.44** (2.26-2.64) | **3.43** (3.14-3.75) | **4.70** (4.24-5.21) |
| Death from infection | **1** (reference) | **2.44** (2.13-2.79) | **2.01** (1.71-2.37) | **1.63** (1.45-1.85) | **1.93** (1.70-2.19) | **2.23** (1.86-2.66) | **2.41** (1.85-3.14) | **5.38** (3.98-7.26) | **5.51** (3.83-7.93) |
| Type 1 diabetes (n=4,496) only |  |  |  |  |  |  |  |  |  |
| Any plus prescription | **1** (reference) | **1.56** (1.47-1.65) | **1.41** (1.08-1.85) | **1.44** (1.26-1.64) | **1.44** (1.32-1.56) | **1.46** (1.34-1.59) | **1.74** (1.56-1.93) | **1.84** (1.59-2.13) | **2.62** (2.17-3.16) |
| Any as hospitalisation | **1** (reference) | **3.34** (2.82-3.96) | **1.17** (0.52-2.63) | **2.82** (2.17-3.67) | **2.69** (2.17-3.34) | **2.79** (2.25-3.45) | **3.78** (2.96-4.83) | **5.42** (3.96-7.42) | **8.47** (5.86-12.24) |
| Type 2 diabetes (n=78,964) only |  |  |  |  |  |  |  |  |  |
| Any plus prescription | **1** (reference) | **1.29** (1.28-1.31) | **1.23** (1.17-1.28) | **1.19** (1.17-1.22) | **1.27** (1.24-1.29) | **1.42** (1.38-1.46) | **1.52** (1.46-1.58) | **1.60** (1.50-1.70) | **1.71** (1.61-1.81) |
| Any as hospitalisation | **1** (reference) | **1.70** (1.64-1.76) | **1.62** (1.52-1.73) | **1.37** (1.32-1.43) | **1.53** (1.46-1.59) | **1.92** (1.82-2.03) | **2.30** (2.11-2.50) | **3.23** (2.93-3.55) | **4.31** (3.88-4.80) |

a - Poisson model conditioned on matchsets fits a term to compare DM vs. non-DM. b - Poisson model now fits HbA1c categories, with non-DM as reference category. c -Incidence Rate Ratios adjusted for age, sex, smoking, BMI, deprivation quintile. In conditional model age and sex controlled for via the matching.
Number of (non-DM) age-sex-practice matched controls: All DM=153,341, T1DM=8,231, T2DM=141.768.
Number of patients (%) with at least infection event or died from infection during follow-up were as follows:
 - Any infection plus prescription: All DM n=42,854 (50%), All non-DM n=60,252 (39%), T1DM n=2,147 (48%), T1 non-DM n=2,828 (34%), T2DM n=39,712 (50%), T2 non-DM n=56,243 (40%)
 - Hospitalisation for infection: All DM n=11,320 (13%), All non-DM n=10,333 (7%), T1DM n=551 (12%), T1 non-DM n=348 (4%), T2DM n=10,769 (14%), T2 non-DM n=11,423 (8%)
 - Death from infection: All DM n=1,106 (1.3%), All non-DM n=1,058 (0.7%)

**Table 2:** Adjusted IRRs for summary infection groups during 2010-5 by mean HbA1c level during 2008-9 among DM patients only (n=85,312), with additional adjustment for duration of DM

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Outcome | DM Typec | Duration of Diabetes | Mean HbA1c (2008-9) in DM patients  | Attributable risk fractions |
|  | **Type 1** | **Type 2** | **0-5yrs** | **5-15yrs** | **>15yrs** |  **<6%****<42 mmol/mol** | **≥6 to <7%****≥42-<53 mmol/mol** | **≥7 to <8%****≥53-<64 mmol/mol** | **≥8 to <9%****≥64-<75 mmol/mol** | **≥9 to <10%****≥75-<86 mmol/mol** | **≥10 to <11%****≥86-<97 mmol/mol** | **≥11%****≥97 mmol/mol** |  |
|  | **IRRa**, 95% CI | **IRRa**, 95% CI | **IRRa**, 95% CI | **IRRa**, 95% CI | **IRRa**, 95% CI | **IRRa**, 95% CI | **IRRa**, 95% CI | **IRRa**, 95% CI | **IRRa**, 95% CI | **IRRa**, 95% CI | **IRRa**, 95% CI | **IRRa**, 95% CI | **ARd,** 95%CI |
| Any plus prescription | **1** (refer-ence) | **1.01** (0.97-1.06) | \_ | \_ | \_ | **1.03** (0.98-1.07) | **1** (refer-ence) | **1.05** (1.02-1.07) | **1.15** (1.11-1.19) | **1.24** (1.19-1.29) | **1.27** (1.20-1.36) | **1.40** (1.32-1.48) | **6.8** (5.6-8.1) |
| **1** (refer-ence) | **0.90** (0.85-0.94) | **1** (refer-ence) | **1.12** (1.10-1.15) | **1.29** (1.25-1.33) | **1.03** (0.99-1.08) | **1** (refer-ence) | **1.02** (1.00-1.05) | **1.10** (1.06-1.13) | **1.18** (1.13-1.23) | **1.21** (1.14-1.29) | **1.32** (1.25-1.40) |  |
| Any as hospitalisation | **1** (refer-ence) | **1.36** (1.24-1.50) | \_ | \_ | \_ | **1.17** (1.09-1.25) | **1** (refer-ence) | **1.09** (1.04-1.15) | **1.34** (1.26-1.42) | **1.58** (1.46-1.71) | **2.18** (1.98-2.40) | **2.95** (2.66-3.28) | **16.5** (14.1-18.8) |
| **1** (refer-ence) | **1.12** (1.01-1.24) | **1** (refer-ence) | **1.23** (1.17-1.28) | **1.54** (1.44-1.64) | **1.18** (1.11-1.27) | **1** (refer-ence) | **1.05** (0.99-1.10) | **1.23** (1.16-1.31) | **1.43** (1.32-1.56) | **1.98** (1.80-2.18) | **2.70** (2.43-3.00) |  |
| Death from infection | **1** (refer-ence) | **1.82** (1.33-2.48) | \_ | \_ | \_ | **1.25** (1.05-1.49) | **1** (refer-ence) | **1.14** (0.99-1.31) | **1.24** (1.02-1.51) | **1.31** (0.99-1.74) | **2.90** (2.13-3.94) | **3.01** (2.10-4.30) | **15.7** (8.7-22.8) |
| **1** (refer-ence) | **1.42** (1.03-1.96) | **1** (refer-ence) | **1.38** (1.20-1.59) | **1.85** (1.53-2.25) | **1.28** (1.07-1.52) | **1** (refer-ence) | **1.06** (0.92-1.23) | **1.10** (0.90-1.34) | **1.13** (0.85-1.50) | **2.51** (1.84-3.41) | **2.65** (1.86-3.77) |  |

Note - Reference category in Poisson models are patients with DM and HbA1c between 6 to 7%.
a- IRR adjusted for age, sex, smoking, BMI, deprivation quintile and type of diabetes. b - Additionally adjusted for duration of diabetes. c – Type uncertain also fitted in model (estimates not shown). d - Attributable risk fractions for infections for a baseline scenario of HbA1c=6-7% among all patients with diabetes. 95% CI calculated by taking the 2.5th and 97.5th percentiles from 1,000 bootstrap simulations

**Table 3:** Adjusted IRRs and attributable risk fractions for specific infections during 2010-5 by mean HbA1c level, patients with DM only (n=85,312)

|  |  |  |
| --- | --- | --- |
| Infection Category | Mean HbA1c level (2008-9) in DM Patients (n=85,312) | Attributable risk fractions |
|  |  **<6%****<42 mmol/mol** | **≥6 to <7%****≥42-<53 mmol/mol** | **≥7 to <8%****≥53-<64mmol/mol** | **≥8 to <9%****≥64-<75 mmol/mol** | **≥9 to <10%****≥75-<86 mmol/mol** | **≥10 to <11%****≥86-<97 mmol/mol** | **≥11%****≥97 mmol/mol** |  |
|  | **IRRa**, 95% CI | **IRRa**, 95% CI | **IRRa**, 95% CI | **IRRa**, 95% CI | **IRRa**, 95% CI | **IRRa**, 95% CI | **IRRa**, 95% CI | **ARb,** 95%CI |
| Bone & Joint Infections | **1.12** (0.81-1.53) | **1** (reference) | **1.55** (1.26-1.91) | **2.49** (1.95-3.17) | **3.45** (2.62-4.55) | **5.39** (3.95-7.34) | **8.71** (6.64-11.41) | **46.0** (37.5-54.0) |
| (Acute) Cholecystitis | **1.03** (0.77-1.38) | **1** (reference) | **0.98** (0.81-1.20) | **1.15** (0.90-1.47) | **0.92** (0.64-1.32) | **1.52** (1.05-2.19) | **2.28** (1.53-3.39) | **4.5** (-5.9-14.8) |
| Endocarditis | **1.16** (0.43-3.12) | **1** (reference) | **1.38** (0.74-2.56) | **1.17** (0.44-3.10) | **1.72** (0.62-4.74) | **5.01** (1.98-12.71) | **5.56** (2.09-14.78) | **26.2** (-5.3-56.3) |
| Eye Infection | **0.97** (0.87-1.08) | **1** (reference) | **0.95** (0.87-1.03) | **1.01** (0.93-1.11) | **1.13** (1.01-1.26) | **1.02** (0.86-1.19) | **1.16** (0.95-1.41) | **-0.3** (-4.2-3.6) |
| Gastro-Intestinal | **1.06** (0.92-1.21) | **1** (reference) | **1.05** (0.95-1.15) | **1.16** (1.04-1.30) | **1.23** (1.05-1.44) | **1.51** (1.22-1.86) | **1.84** (1.50-2.26) | **8.0** (2.6-12.8) |
| Infective Otitis Externa | **0.83** (0.69-1.01) | **1** (reference) | **0.99** (0.90-1.10) | **1.06** (0.95-1.19) | **1.05** (0.90-1.23) | **1.01** (0.82-1.25) | **0.98** (0.76-1.26) | **-0.4** (-5.8-5.2) |
| LRTI | **1.03** (0.97-1.10) | **1** (reference) | **1.06** (1.02-1.10) | **1.16** (1.10-1.23) | **1.26** (1.17-1.34) | **1.27** (1.15-1.40) | **1.25** (1.14-1.37) | **6.7** (4.9-8.7) |
| Mycoses - Candidiasis | **0.93** (0.82-1.05) | **1** (reference) | **1.15** (1.07-1.25) | **1.47** (1.35-1.59) | **1.50** (1.36-1.67) | **1.62** (1.41-1.86) | **1.92** (1.66-2.22) | **16.5** (12.5-20.1) |
| Mycoses - Other Fungal | **0.96** (0.86-1.06) | **1** (reference) | **1.04** (0.98-1.10) | **1.05** (0.97-1.14) | **0.95** (0.85-1.07) | **0.93** (0.79-1.09) | **0.88** (0.74-1.05) | **0.7** (-3.1-4.6) |
| Pneumonia | **1.23** (1.12-1.36) | **1** (reference) | **1.10** (1.03-1.17) | **1.40** (1.28-1.52) | **1.71** (1.51-1.94) | **2.00** (1.69-2.38) | **2.68** (2.26-3.17) | **15.3** (11.9-18.5) |
| Sepsis | **1.25** (1.06-1.47) | **1** (reference) | **1.20** (1.07-1.35) | **1.53** (1.32-1.76) | **1.69** (1.39-2.05) | **2.36** (1.85-3.00) | **3.64** (2.82-4.70) | **20.8** (15.2-26.2) |
| (Acute) Sinusitis  | **1.07** (0.93-1.23) | **1** (reference) | **1.06** (0.97-1.16) | **1.14** (1.02-1.27) | **0.98** (0.83-1.15) | **0.91** (0.72-1.14) | **0.86** (0.67-1.11) | **3.5** (-2.1-9.6) |
| Skin - Cellulitis | **1.22** (1.13-1.32) | **1** (reference) | **1.07** (1.01-1.13) | **1.28** (1.19-1.38) | **1.63** (1.49-1.79) | **1.74** (1.53-1.99) | **2.29** (2.04-2.57) | **14.0** (11.3-17.0) |
| Skin - Other | **1.06** (0.98-1.14) | **1** (reference) | **1.06** (1.01-1.12) | **1.23** (1.16-1.31) | **1.45** (1.35-1.55) | **1.52** (1.39-1.68) | **2.04** (1.83-2.27) | **12.1** (9.5-14.4) |
| Surgical Site | **0.98** (0.83-1.17) | **1** (reference) | **0.96** (0.84-1.09) | **0.93** (0.79-1.10) | **1.26** (1.04-1.53) | **1.43** (1.10-1.85) | **2.01** (1.56-2.60) | **3.0** (-3.7-10.0) |
| Tuberculosis (TB) | **0.27** (0.03-2.10) | **1** (reference) | **1.47** (0.75-2.87) | **1.13** (0.50-2.53) | **1.40** (0.55-3.59) | **3.78** (1.39-10.26) | **3.04** (1.21-7.64) | **23.7** (-11.1-54.0) |
| (Other) URTI | **0.95** (0.88-1.03) | **1** (reference) | **1.11** (1.06-1.16) | **1.09 (**1.03-1.16) | **1.10** (1.02-1.19) | **1.08** (0.97-1.20) | **0.98** (0.88-1.10) | **4.8** (2.2-7.5) |
| Urinary Tract Infection  | **1.01** (0.93-1.09) | **1** (reference) | **1.06** (1.00-1.11) | **1.18** (1.10-1.27) | **1.21** (1.10-1.34) | **1.26** (1.11-1.42) | **1.44** (1.24-1.67) | **6.3** (3.6-8.6) |

LRTI = Lower Respiratory Tract Infection; URTI = Upper Respiratory Tract Infection.
a - Incidence Ratio Ratios adjusted for age, sex, smoking, BMI, deprivation quintile. Reference category in Poisson models are patients with DM and HbA1c between 6 to 7%.

b - Attributable risk fractions for infections for a baseline scenario of HbA1c=6-7% among all patients with diabetes. 95% CI calculated by taking the 2.5th and 97.5th percentiles from 1,000 bootstrap simulations