



RESEARCH

INFORMATION

## Serial Missed Appointments in the NHS



### AIMS

A data linkage project using anonymised general practice (GP) medical records aimed to investigate whether patterns of missed GP appointments were associated with social vulnerability and poorer health outcomes. Addressing the causes of low engagement in health care is needed to tackle health inequalities.



### KEY FINDINGS

- Patients who miss more than 2 GP appointments per year are likely to be socially vulnerable and have poorer health outcomes
- **Practice level factors**-the strongest predictor of missing multiple appointments is a practice appointment delay of 2-3 days
- Patients who experience high socio-economic deprivation who are registered in practices in affluent settings (pocket deprivation) are at highest risk of missing multiple appointments
- **Patient level factors**- patients who experience high socio-economic deprivation, those who are aged 19-30 and over 90 years of age are most likely to miss multiple appointments
- There is a '**dose response**' with morbidity and mortality outcomes- patients with more long term conditions are at greater risk of missing multiple appointments
- **Missing multiple GP appointments** is a strong risk factor for **greatly increased mortality**



## WHAT DID THE STUDY INVOLVE?

155 GP practices were recruited into the study as a representative sample of Scottish practices. The first analysis was of 550,083 anonymised patient records with the second of 824,374 anonymised patient records, which included data on 9,177,054 and 11,490,537 consultations respectively. These data were linked to other data about hospital outpatient, inpatient, A&E attendances, and education relating to school attendance and exclusions. This allowed analyses using statistical techniques of; the diagnoses of health conditions, drug prescriptions, patients' social circumstances, and the features of practices. This enabled an analysis of the characteristics of patients who attended and missed appointments and of the practices where these patients were registered.



## WHAT WERE THE RESULTS AND WHAT DO THEY MEAN?

**Patterns** of missed appointments were defined from average number of primary care face to face appointments over the previous three years. Definitions of patterns of missed appointments have not been made before. These were classified as:

**Never** missed appointments per year, 0 [**54%**, 297,002 patients],

**Low** missed appointments per year, <1,

**Medium** missed appointments per year, 1-2 [**46%**, 212,155 patients],

**High** missed appointments per year, 2 or more.

**19% (40,926) patients missed 2 or more appointments**

**Predictors: Both patient and practice characteristics** were associated with patterns of missed appointments and the association was strongest when patient and practice factors were analysed together.

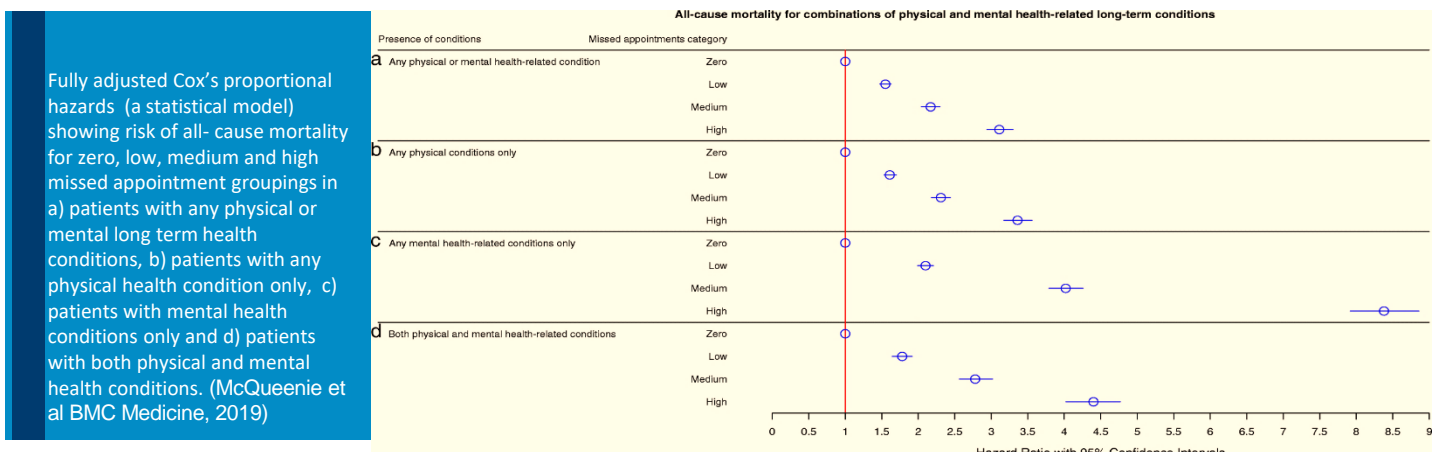
**Practice factors: Appointment delay of 2–3 days** ( measured by Relative Risk Ratio (RRR); this is the ratio of the probability of missing GP appointments for the patients who had this appointment delay versus patients who had no appointment delay [a RRR of 1 means no difference]. It was 2.54, 95% Confidence Interval 2.46 – 2.62). This was *most* strongly associated with non-attendance. **Urban GP practices** were strongly associated, and **more deprived patients registered with GP practices in more affluent settings** had the highest risk of serially missing appointments

**Patient factors: Most socio-economically deprived** (SIMD 1) patients *most* likely to miss (RRR 2.27, 95% CI 2.22 – 2.31), most remotely located patients *least* likely to miss (0.37, 0.36–0.38), patients **aged 16–30 years**(1.21, 1.19–1.23) & **older than 90 years** (2.20, 2.09 –2.29) *more* likely to miss GP appointments (Ellis, McQueenie et al Lancet Public Health 2017)

**Outcomes** Patients with **more long-term conditions** have *increased* risk (controlling for number of appointments made) and patients were at much greater risk of **all-cause mortality, with the risk increasing with number of missed appointments** (independent of morbidities)

Patients with **long-term mental-health conditions missing >2 appointments per year had >8x** risk of all-cause mortality compared with those who (had long term mental health conditions but) missed none, dying at a **younger age**, and commonly from **non-natural external factors**

**Missing appointments repeatedly seems to be a powerful marker for greatly increased risk of mortality, particularly among those without physical long-term conditions** (after adjustment for all other mortality risks)



## WHAT IMPACT COULD THE FINDINGS HAVE?

- Serial missed appointments imply low engagement in care. Causes should be examined and understanding should shape future health and social care policy
- This work to date has identified a series of risk factors. There are more papers underway on social vulnerability factors, hospital admissions, A&E, outpatient attendances and some school outcomes
- We plan to develop a risk model that can be used online and in GP practices to identify high risk patients for serial missed appointments so appointment and patient recall systems that GPs use can be adapted
- We would like to see a systems wide approach to supporting patients to increase attendance and future work will build on this study to develop interventions to do this



## HOW WILL THE OUTCOMES BE DISSEMINATED?

- Three peer reviewed papers have been published to date and two rapid response letters  
Published work accessible here-
- Numerous reports in national and international news media including social media
- Two meetings have been held with Health and Social Care directorate at Scottish Government and more are planned, including how they will support dissemination and future work
- Information about the study has been sent to other key stakeholders in the NHS and voluntary sector.



## CONCLUSION

- This ground-breaking study defined, and identified GP practice and patient factors that help predict patterns of missed GP appointments in a large Scottish representative sample
- **Patients who serially miss appointments are socially vulnerable, and have high health needs.** It is a strong risk factor for **greatly increased mortality**
- Attention needs to be paid to strategies to increase engagement in care so that stark inequalities in outcomes can be addressed more effectively
- Further results from this dataset including the implications for hospital care will be published
- Future work will focus on developing interventions to increase engagement in care



## RESEARCH TEAM & CONTACT

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### Additional Information

Funded project: dates July 2015- September 2018, cost £202,804.