

# Cigarettes and capacity: a case study in enforced smoking cessation

Gary Cooney *AB, MBChB, MRCPsych*, Douglas Murdie *MBChB, MRCPsych*, Anthony Moffoot *MBChB, MRCPsych*

The antipsychotic agent clozapine is frequently used in patients with treatment-resistant psychotic illnesses such as schizophrenia and schizoaffective disorder. It is well established that cigarette smoking reduces circulating levels of clozapine, thereby limiting its efficacy. Here, Dr Cooney et al. report the unprecedented step in applying to the Courts for a mandate through the Adults with Incapacity Act (Scotland) for a patient to follow an enforced smoking cessation program in the hope that this would improve her psychiatric symptoms. The authors illustrate how solutions to medical problems can be achieved by looking beyond biomedical models.



Cigarette smoking is known to reduce the efficacy of clozapine. This represents a particular challenge

in the treatment of schizophrenia, as clozapine is most often reserved for patients who have not responded to other antipsychotic medications. As these treatment-resistant patients have few alternative medication strategies remaining, their smoking status becomes of central importance in promoting recovery.

A meta-analysis of 42 studies indicates that patients with schizophrenia have over five times the odds of current cigarette smoking when compared with the general population.<sup>1</sup> In cigarettes, the carcinogenic polycyclic aromatic hydrocarbons act as potent inducers of the cytochrome (CYP) P450 1A2 enzyme, which is responsible for the majority of clozapine metabolism.<sup>2</sup> Smoking therefore leads to a reduction in circulating clozapine levels and an associated increase in psychotic symptoms.

Smoking cessation has been shown to lead to an increase in circulating clozapine levels by approximately 45%. However, there is a large degree of variability

	Positive symptoms (range 7–49)	Negative symptoms (range 7–49)	General psychopathology (range 16–112)
Sept 2014	43	32	59
Dec 2014	18	17	20

**Table 1.** PANSS scores before and after intervention to reduce cigarette smoking

between patients.<sup>3</sup> It would appear that CYP450 activity returns to normal levels quickly with the half-life activity decrease estimated at between 27 and 54 hours.

## Case presentation

Ms P first presented to psychiatric services at age 39 years, although reports indicate a gradual functional decline commencing approximately four years prior to this. She was married with two children and worked as a manager in a local retail store. She was a smoker of 10 to 15 cigarettes per day. There was no family history of psychiatric illness and no indication of any illicit substance misuse.

She was noted to have increasingly bizarre ideation, holding a belief that her husband's face was changing shape and that her children were in danger. In time, she developed more prominent preoccupations and delusions on philosophical, psychological and religious themes. Her sentence and

word structure became disordered and her ability to take care of her health, her home and her finances became seriously impaired.

From 2000 to 2011, Ms P's treatment was largely based in the community, with regular psychiatric reviews and input from psychological services, community psychiatric nursing teams, occupational therapy and social work. During this period she also had several hospital admissions, of increasing duration, many of which were on a compulsory basis. She was in general compliant with medication and underwent a trial of various first- and second-generation antipsychotics, both orally and in depot form. Most of these brought some relief in the earlier stages, however, invariably psychotic symptoms returned requiring a re-consideration of medication. Before commencing clozapine, Ms P had had treatment with risperidone, pipotiazine, olanzapine, flupentixol and

amisulpride. Her cigarette smoking increased markedly during this period; at times she was smoking up to 100 cigarettes per day.

In late 2011 Ms P was readmitted to hospital with a relapse in psychotic symptoms. Clozapine was commenced approximately six months later and the dose was gradually escalated to 450mg twice a day. Lamotrigine was also prescribed at 75mg twice daily in an effort to address the affective component of her illness. No improvements were seen with this regimen and so augmentation with amisulpride was undertaken, again with disappointing results. A referral was made for inpatient rehabilitation services as it seemed unlikely that Ms P would recover adequately to allow a community discharge.

In early 2013, Ms P suffered a mild respiratory tract infection which lasted approximately 10 days. She remained in bed through most of this period and as a consequence stopped smoking cigarettes abruptly. Prior to this, while an inpatient, she had ordinarily smoked between 20 and 30 cigarettes per day.

Within days, psychiatric symptoms improved substantially. For the first time since admission, Ms P could tolerate an interview and engage in meaningful conversation. She was noted to be much warmer in countenance and far less preoccupied with philosophical and psychological discussion. Once fully recovered from infection, however, Ms P quickly returned to smoking 20 to 30 cigarettes per day and experienced a full relapse in psychotic symptoms.

Now with evidence of the clear association between Ms P's smoking pattern and her symptoms of mental illness, the clinical team felt that decisions surrounding Ms P's smoking status carried considerable implications with respect to treating

her mental illness. It seemed that with smoking cessation, recovery from mental illness was possible for Ms P. By contrast, continuation was likely to perpetuate her psychotic symptoms indefinitely.

Given the nature and extent of her illness, Ms P could not appreciate the role played by cigarette smoking in her condition. She consistently rejected her diagnosis, did not accept that she suffered from any mental illness and regarded her clinical team as a set of impostors. It was felt that Ms P lacked capacity to make an informed decision regarding cigarette smoking.

While wishing to respect as far as possible Ms P's autonomy, the consensus view was that this could not extend to denying her an opportunity of recovery. This was not a unanimous position, however: some members of the clinical team felt that to prevent Ms P from smoking was an infringement of her rights. We felt it important to be candid in acknowledging the competing ethical standpoints; we were adopting a paternalistic approach in defining and pursuing the patient's best interests. Ms P, for her part, was strongly opposed to the measure, though her family gave their full support.

An application was made to the Courts by Ms P's social worker requesting under the Adults with Incapacity (Scotland) Act 2000 provision to implement a compulsory 12-week smoking cessation programme. This was granted in September 2014 and the programme was commenced directly thereafter. A schedule was drawn up by the hospital's smoking cessation nurse which facilitated a gradual reduction in cigarettes, with the availability of nicotine replacement therapies. The patient was placed on constant nursing observation throughout

this period to ensure compliance with the programme.

### Outcome and follow-up

Within one week Ms P's mental state had improved noticeably. She could tolerate brief interviews, had begun to speak coherently with less psychotic content. By the third week of the programme, she was experiencing long periods of lucidity and was showing promising signs of recovery. She completed the program, stopped cigarette smoking entirely and was discharged home shortly thereafter, supported by a community care package.

Scoring on the Positive and Negative Symptom Scale (PANSS) for schizophrenia reflected this improvement.<sup>4</sup> Ms. P's total rating reduced from 134 before the intervention to 55 thereafter (range 30–210) (see Table 1):

### Discussion

This is the first instance, to our knowledge, of the use of capacity legislation to permit mandatory smoking cessation for the purposes of improving mental health. It was a contentious clinical decision; had Ms P not shown such clear symptomatic improvement when previously free of cigarettes, this would have been a more difficult position to justify. Our case study applies to legislation in Scotland, however, similar provisions might be sought in England and Wales under the Mental Capacity Act or in Northern Ireland under the Mental Capacity Bill, which is currently under parliamentary review.

This case study asks whether clinicians should intervene more readily in cases where smoking may be a significant obstacle to recovery. In patients who remain symptomatic despite clozapine, who are current cigarette smokers, should an assessment of capacity

be made as to whether they can appreciate the implications of this? While preserving patient autonomy is a central tenet to good psychiatric care, this should not necessarily take precedence over providing optimal treatment and potential recovery.

Not every patient might be expected to replicate Ms P's recovery. There is substantial phenotypic variability in CYP450 induction according to genotype, liver function, diet and co-administered medications.<sup>5</sup> It may be hard to say, therefore, without the advantages of an episode of physical illness, who would respond best to a program of smoking cessation.

One approach that has been suggested is to estimate an individual's phenotypic activity

through use of a probe drug such as caffeine or melatonin. By measuring in plasma or salivary samples the ratio of paraxanthine to caffeine, following administration of a defined dose of caffeine, it is possible to infer the rate of CYP450 enzyme induction rate.<sup>6,7</sup>

In this way, clinicians might be able to identify those patients who could benefit most from a smoking cessation program.

*Dr Cooney and Dr Murdie are both CT3 Psychiatry Doctors at Royal Edinburgh Hospital and Dr Moffoot is a Consultant Psychiatrist at the Royal Edinburgh Hospital, Scotland.*

#### **Declaration of interests**

No conflicts of interest were declared.

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