From the birth of the smokers’ clinic to the invention of Nicorette: Problematizing smoking as addiction in Sweden 1955–1971

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ABSTRACT
AIM – To discuss how scientific confirmation of cigarette smoking as a major contemporary drug problem during the 1980s was preceded by a rising tide of clinical and pharmaceutical innovation dedicated to treating smoking as a problem of addiction. BACKGROUND – This current of innovation, commencing already in the 1950s, carried the smokers’ clinic and nicotine replacement therapies (NRTs) into the world, both of which were originally invented and pioneered in Sweden. It is argued that both of these inventions were vital for advancing the problematization of smoking as a matter of nicotine addiction. While the British doctor Lennox Johnston is well-known for his early attempts to demonstrate the reality of smoking as nicotine addiction through auto-experimentation, the historical significance of Börje Ejrup’s founding of the first smokers’ clinics in Stockholm in the late 1950s has not been widely commented upon. Attempting to remedy this situation, the rise and fall of Ejrup’s clinics deploying lobeline substitution therapy as a cure for ‘nicotinism’ is outlined in the main body of the paper. FINDINGS – Although the clinical treatment of smoking as addiction lost momentum during the 1960s, the invention of Nicorette gum in southern Sweden at the end of the decade provided renewed impetus. Commencing in Helsingborg and Lund in 1970, the smokers’ clinic and NRTs entered into the long-term service of each other; a new combination that in just over a decade would succeed in propagating the reality of smoking as nicotine addiction on to a global stage.
KEYWORDS – Nicotine addiction, cigarette smoking, problematization, Börje Ejrup, the smokers’ clinic, nicotine replacement therapies, Sweden

Introduction
Cigarette smoking is globally recognized today as a drug problem and a question of nicotine addiction. However, this is not something that arose hand in hand with appreciation of the relationship between smoking and chronic conditions such as...
lung cancer and cardiovascular disease. In the first U.S. Surgeon General’s report on smoking and health, which appeared in 1964, a point was made of distinguishing smoking from drug addiction by classifying it as a matter of drug habituation. While acknowledging that smoking undoubtedly becomes compulsive for some heavy smokers, it was claimed that the desire to smoke appears to be ‘solely psychogenic since physical dependence does not develop to nicotine or to other constituents of tobacco’ (U.S. Department of Health, Education and Welfare, 1964, p. 352). However, by 1988 and the publication of the 20th U.S. Surgeon General’s report on smoking, this judgement had been reversed as it was unambiguously affirmed that: (1) cigarettes are addicting (2) nicotine is the drug in tobacco that causes addiction and (3) the pharmacologic and behavioural processes determining tobacco addiction are similar to those determining addiction to drugs like heroin and cocaine (U.S. Department of Health and Human Sciences 1988, p. 9).

This about face of expert opinion is conventionally tied to an unprecedented wave of targeted psychopharmacological research initiated in the U.S. in the late 1970s scientifically confirming the addictiveness of nicotine (Henningfield & Hartel, 1999; Henningfield & Zeller, 2009). However, my aim in this paper is to focus on events taking place a couple of decades prior to this as some of the first actions leading up to later research in the U.S. took place. The basic behavioural pharmacological research demonstrating the addictiveness of tobacco use was itself preceded by a rising tide of clinical and pharmaceutical innovation dedicated to treating and acting upon smoking as a question of nicotine dependence. Two closely related novelties carried into the world on this tide were the smokers’ clinic and nicotine replacement therapies (NRTs) both of which were originally invented and pioneered in Sweden. Due to the global diffusion of these two vital components advancing the medical treatment of smoking as a matter of nicotine dependence, the 1988 U.S. Surgeon General’s report ended up providing verification of what had already become a foundation for clinical practice in large parts of the world.

Given this pattern of development, where the treatment of smoking as a drug problem preceded and helped to trigger fundamental research confirming the reality of the addiction being treated, something other than a straightforward narrative of scientific discovery is needed to capture what took place. Therefore, my intention in this paper is to address the fact of nicotine addiction as an emergent state of affairs arising out of the expanding problematization of the relationship of smoking to health (Foucault, 1984; 1988; Castel, 1994; Bacchi, 2012). Adopting a broadly Foucauldian approach to the acceptance of smoking as a drug problem, I see nicotine addiction as having resulted from a combination of events and circumstances which are still unfolding today as the many different technical, scientific, political and economic forces connected to this phenomenon continue to collide and interact with each other. Over time, varying constellations of heterogeneous forces have both facilitated and hindered different conceptualizations and interventions directed at the relationship between smoking and health. Thus, we have been able to witness the formation of different
arrangements of power-knowledge and power-ignorance alike impacting on the smoking problem (cf. Proctor, 2008, p. 11; 2011). As the U.S. Surgeon General rejected smoking as a manifestation of drug addiction in 1964, so tobacco industry scientists were in growing agreement about this state of affairs and strategising on the basis of it (Slade, Bero, Hanauer, Barnes, & Glantz, 1996). In this way, the tide of clinical and pharmaceutical innovation discussed in this paper proceeded in the shadow of the ‘freebasing revolution’ in cigarette manufacture re-engineering the cigarette as a technically advanced drug delivery system (Stevenson & Proctor, 2008; ASH, 1999). This chemical revolution associated in particular with the global ascendency of the Marlboro brand from the early 1960s built on the removal of the very same public knowledge of nicotine’s addictiveness that the development of NRTs contemporaneously sought to promote and disseminate (Elam, 2012).

One person who has received relatively widespread retrospective recognition for his early efforts to clinically demonstrate the reality of smoking as nicotine addiction is the Scottish doctor Lennox Johnston (British Medical Journal, 1986; Snowdon, 2009). In comparison far less attention has been paid to Börje Ejrup’s considerably more extensive clinical endeavours in Stockholm during the same period. In part at least this must reflect the paucity of source materials discussing Ejrup’s contribution in English. Although Ejrup published several papers in English summarizing his clinical activities (e.g. Ejrup 1964; 1967), the most comprehensive accounts remain only available in Swedish. Therefore, my intention here is to build on this Swedish source material to provide a relatively detailed description of the rise and fall of Ejrup’s smokers’ clinics for a larger international audience.

Using the space available in this article my aim is to focus on the establishment of the very first smokers’ clinics in Stockholm in the late 1950s. Founded by the Swedish cardiologist Börje Ejrup and based upon novel practices of drug substitution, these clinics, although short-lived, can be understood as having constituted local harbingers of the global future of nicotine replacement therapy. While Ejrup failed to win lasting acceptance for his original and specific response to smoking and the problem of ‘nicotinism’, he initiated a fragile clinical infrastructure which came to be endowed with new meaning and significance at the end of the 1960s in connection with the invention of Nicorette chewing gum.

In particular my historical narrative draws on Ejrup’s reporting of his clinical undertakings in the “Swedish Medical Journal” (Svenska läkartidningen) as well as the reports in this journal by the doctors who rapidly adopted his treatment programme. Another valuable source I draw upon is the journal of the Swedish National Council Against Tobacco – “We and Tobacco” (Tobaken och Vi). Ejrup’s activities were widely discussed in this journal by both Ejrup himself and other commentators including the psychiatrist Ture Arvidsson who redesigned Ejrup’s smokers’ clinic in the mid-1960s after the latter had emigrated to the United States. Yet another source I refer to is the co-authored book Ejrup published in 1959 entitled “The Art of Quitting Smoking” (Konsten att sluta röka). This again docu-
ments and analyses his treatment cure as well as his ideas concerning the type of drug problem posed by cigarette smoking. The brief discussion towards the end of the paper of the importance of the clinical infrastructure first established by Ejrup for the subsequent Swedish development of Nicorette gum as the first NRT is informed by research I have carried out at the historical archives of the Leo Pharmaceutical Company in Helsingborg. In the next section, by way of preface to discussion of the birth of the smokers’ clinic in Stockholm, I summarize the contribution of Lennox Johnston for advancing an understanding of smoking as nicotine addiction prior to 1960 enabling his efforts to be better gauged in relation to those of Ejrup.

**Lennox Johnston: Demonstrating nicotine addiction through auto-experimentation**

It is through his one page article ‘Tobacco Smoking and Nicotine’ published in the *Lancet* in 1942 that Lennox Johnston has won broadest recognition for his pioneering efforts to advance the problematization of cigarette smoking as addiction. Acting on the assumption that ‘smoking tobacco is essentially a means of administering nicotine, just as smoking opium is a means of administering morphine’, Johnston (1942, p. 742) tells of how he gave nicotine hypodermically to 35 volunteers to compare its effects, ‘and particularly it psychic effects’, to those of tobacco smoking. As a general practitioner and anti-smoking campaigner Johnston’s career long ambition became to medically demonstrate how smoking corresponds to a disease of self-poisoning arising from ‘a pharmacological craving for nicotine’ (Johnston 1957, p. 28). However, as we shall see, Johnston in his relatively lone and isolated efforts to bring nicotine addiction to light was unable to draw upon the same dense network of scientific and political connections that Börje Ejrup was able to mobilize.

As Johnston reveals in his still little known book *The Disease of Tobacco Smoking and Its Cure* (1957), the foundations for his problematization of smoking as a drug problem remained first and foremost practices of auto-experimentation. Although he successfully persuaded a limited number of his patients to join him, he remained his own first research volunteer. Following in a long medical tradition of using self-experimentation as a means to clarify the true nature of disease (Altman, 1987; Kerridge, 2003), Johnston chose to take personal responsibility for facing the risks accompanying human experimentation into the addictive properties of a known poison. Unable to find any medical account of the subjective action of nicotine, Johnston acted to make these actions literally self-evident so as to assess their similarity to the psychic effects of cigarette smoking with which he was already familiar as a confirmed smoker. After recounting how he initially only succeeded in subjecting himself to a life-threatening instance of acute nicotine poisoning, Johnston tells how he eventually learnt to replace the psychic effect of a cigarette with a carefully controlled hypodermic dose of nicotine sulphate:

After taking 1/50 grain nicotine by hypodermic injection 3 or 4 times per day for a month, along with an occasional cigarette, I preferred an injection of nicotine to a cigarette. I had become
used to the different tempo of absorption and I had no respiratory irritation. One has to wait 4–5 minutes after an injection for nicotine action to become satisfactory. The action lasts about 15 minutes (Johnston, 1957, pp. 31–32).

Having mastered this mode of drug delivery, Johnston tried to mimic the psychic effects of smoking through the consumption of nicotine in oral solution and by painting nicotine solution on to the flexor surface of his forearm (Johnston, 1957, p. 32). While these experiments proved less successful, he still concluded that the repeated urge to smoke appears to directly coincide with a recurring need to appease a craving for nicotine. In order to explore further the identity of cigarette smoking as a drug addiction, Johnston then dedicated himself to becoming addicted to a drug entirely new to him for the purposes of comparative analysis. He chose cocaine and after injecting himself morning and night for ten days found himself developing a powerful new pharmacological craving (Johnston, 1957, p. 35). Thus, he was able to personally confirm how addiction to nicotine and cocaine alike resembles a perpetual circle of pleasure and displeasure where the joy of appeasing drug cravings is followed by depression and the intensification of drug urges anew.

Although convinced that cigarette smoking and nicotine injections could be made interchangeable, Johnston did not prescribe drug replacement as a cure for smoking. Experimenting with nicotine replacement was a matter of medical research for him and purely a means of evidencing the reality of smoking as addiction. Unlike Ejrup, Johnston saw no immediate medical cure for nicotine addiction on the horizon:

I have no easy cure for smoking. Had I an innocuous tablet or an injection that would counteract effectively the craving for tobacco, I would soon be a millionaire! As it is medicaments and instruction schedules are merely adjuncts to the essential cure – the strengthening of will-power by psychotherapy (Johnston, 1957, p. 84).

Johnston prescribed firstly an amalgam of individual and group psychotherapy to combat the combined medical and social disease of smoking – a pharmacological craving for nicotine spread through psychological infection. To facilitate individual efforts to abstain from smoking he recommended non-smokers to build groups with ‘the express purpose of mutual support and resistance to smoking’ (Johnston, 1957, p. 96). Himself, a member of the National Society of Non-Smokers founded in 1926, Johnston recommended that group psychotherapy building mental resistance to smoking should shade into militant public action against tobacco use. For this reason he sought the advice of suffragette Sylvia Pankhurst about how to stage spectacular public demonstrations and hatched plans for a surprise attack on ‘Smoker No.1’ Winston Churchill where he would snatch the cigar from his mouth and publicly stamp on it (Johnston, 1957, p. 49).

Given his vision of the combined pharmacological and psychological nature of nicotine addiction, it is not surprising Johnston had little to say about the potential of new clinical arrangements as
anti-smoking devices. However, writing later in life, he still wished to lay claim to having founded the first smokers’ clinic in the world in November 1957. However, he was apparently forced to close this down after only a short time due to:

...lack of medical and financial support, and increasing realization that it was not too much use curing a few smokers, then turning them loose in our tobacco-addicted society where many would be sure to be psychologically re-infected. I felt that the way to deal with tobacco addiction was to turn the whole country for a time into a vast anti-smoking clinic... (Johnston, 1971, p. 585).

Börje Ejrup and the birth of the Smokers’ Clinic in Stockholm 1955–1960

In his article in the Lancet in 1942 Johnston argued that the medical problematization of smoking must be considered uncontroversial when patients are suffering from diseases clearly aggravated by tobacco use. This was the starting point for Börje Ejrup’s efforts in Sweden to advance both an understanding and the medical treatment of smoking as a problem of drug addiction. Ejrup completed a doctoral degree in the late 1940s where by means of tonoscillography he developed a method for the early diagnosis of arteriosclerosis (Ejrup, 1948). Through this research he was able to precisely measure and visualize how smoking hastened the onset of disease leading him to propose the introduction of drug treatment acting to dampen the otherwise difficult to control tobacco cravings of cardiovascular patients. In his search for an appropriate drug treatment Ejrup was able to draw on preliminary experiences from the United States where lobeline sulphate had been tested as a means to curb the desire to smoke (Ejrup, 1956, p. 2636).

His immediate sources of inspiration included the clinical investigations of Dorsey (1936) and Wright and Littauer (1937) where capsules containing 8 mg of lobeline sulphate were orally administered to smoker/patients according to varying treatment schedules. These preparations were derived from Lobelia inflata a species of Lobelia native to North America which indigenous Americans had allegedly used for smoking and chewing in combination with or in place of tobacco (Dorsey, 1936, p. 629). Building on Dorsey’s encouraging report of his investigations and Wright and Littauer’s rather less sanguine findings, Ejrup initiated clinical trials in November 1955 at Karolinska hospital in Stockholm on a small number of heart patients receiving daily injections of a modified formula of lobeline hydrochloride (Ejrup, 1956, p. 2637).

As Ejrup’s novel experiment drew considerable media attention (e.g. Expressen 1955) he quickly set about gaining access to premises at nearby Norrtulls hospital and in January 1956 opened a ‘polyclinic’ for smokers (Ejrup 1959a, p. 1900; Ejrup & Heed, 1959, p. 64). Despite Johnston’s earlier mentioned claims, this open clinic in Stockholm appears to be a stronger contender for the title of the world’s first smokers’ clinic. Within 6 months, Ejrup had treated 133 smokers at his novel clinic, of which only the initial 10 were heart patients. The remainder had literally walked in off the street and volunteered...
to take part in the well-publicized clinical trials of the new lobeline treatment fully-cognizant of the fact that they might be the ones receiving placebo injections (Ejrup, 1956, p. 2639). All these volunteers identified themselves as suffering from an illness aggravated by smoking such as bronchitis, dyspepsia or angina. However, a small number registered purely ‘economic reasons’ as their primary motivation for seeking help.

Supplies of lobeline hydrochloride were initially ordered from the German company Boehringer Ingelheim. However, the Swedish-Danish company AB Ferrosan, seeing an emerging market opportunity, initiated production and soon took over the provision of supplies (Ejrup, 1956, p. 2639). Ejrup also entered into collaboration with the Swedish Military Pharmacy based at Karolinska Hospital which assisted by manufacturing the ampoules for the blind testing of the new drug. Some patients stopped smoking after 4 or 5 daily injections, while others carried on receiving injections over a longer period of time; some even received up to three injections a day. The initial dose given was 7.5mg of lobeline rising to a maximum dose of 20mg for the most inveterate smokers (Ejrup, 1956, p. 2648). After six months Ejrup was able to report in the “Swedish Medical Journal” (Svenska läkartidningen) that 73 % of those who had received lobeline injections had reduced their cigarette consumption by 75 % or more, and 44 % had quit smoking completely. Of those who had received the placebo injections surprisingly 50 % had cut down by 75 % or more, and 19 % had totally quit (Ejrup, 1956, p. 2652).

In October 1956, Ejrup was forced to temporarily close down his polyclinic and search for new accommodation. This was allocated to him free of charge by the Stockholm Regional Health Authority on the understanding that referred heart patients should receive priority assistance in controlling their smoking behaviour (Ejrup, 1959a, p. 1901). If Ejrup wanted to carry on offering treatment more broadly the activity would have to be made self-financing and run as a private rather than public health service. Thus, it became necessary to standardize and package lobeline injections into a ‘smoking cure’ that could be offered to patients at a set price. The initial price for a ’10-day cure’ was decided at 50 SEK rising to 75 SEK after one year and 125 SEK by 1959 (Ejrup & Heed, 1959, p. 67). Therefore, equivalent to today’s prices (January 2013) the cost of a cure rose from roughly 650 SEK to 1500 SEK over a three year period (www.scb.se). Within a few months of reopening his polyclinic on 1st December 1956, Ejrup claimed to have had a waiting-list of 300 people for the cure (Ejrup, 1957, p. 11). At the yearly “Swedish Medical Congress of Doctors” (Medicinska riksstämmans) in 1957, results based on a further study of 455 new smoker/patients could be presented showing that 65 % had been able to quit smoking as an immediate result of taking the lobeline cure (Ejrup & Wikander, 1959a, p. 2028).

So in stark contrast to Lennox Johnston and his reliance on home-brewed auto-experimentation, Ejrup found it relatively straightforward to build a rapidly expanding network of inventive clinical research and treatment problematizing out of control tobacco use as ‘nicotinism’ (Ejrup, 1964). As a qualified medical researcher at Sweden’s leading university hospital,
Ejrup was able to collude with medical power and authority in Sweden in contrast to Johnston who saw himself pitted against such forces in the UK. Recruited as one of a group of expert advisors to a new look Swedish National Council Against Tobacco founded in 1954, Ejrup lobbied for governmental action on smoking alongside some of the leading figures of Swedish science and medicine of the day. These figures included Professors Sven Hultberg and Elis Berven from Sweden’s leading cancer clinic, Radiumhemmet; Professor Bror Rexed the Secretary of the Swedish Medical Research Council and Professor Gösta Funke the Secretary of the Swedish Natural Science Research Council and member of the Swedish Atomic Committee (Tobaken och Vi, 1957, pp. 4–7).

Having been granted recognition as a leading Swedish expert on the increasingly worrying consequences of smoking for health Ejrup was offered the help of the Swedish National Council Against Tobacco in initiating three further smoking cessation polyclinics in the Stockholm area during 1958. The first of these in the Årsta district of the city was officially opened by a leading representative from the Swedish Medical Board on 15th March with a string of governmental and parliamentary dignitaries in attendance (Tobaken och Vi, 1958, p. 11). All four polyclinics were designed to be open daily between 8am and 7pm and generously staffed by two nurses who both provided the injection treatment and maintained patient records. A doctor (Ejrup himself) visited each of the clinics for 4–6 hours a week to supervise the progress of treatment. Smoker/patients were encouraged to book appointments adapted to their individual smoking habits and at times when their tobacco cravings could be expected to be most intense (Ejrup, 1959a, p. 1902).

The 10-day cure was refined to combine ascending daily doses of lobeline hydrochloride (20mg up to 60mg if required) with daily intake of both minor tranquilizers to combat restlessness and irritability (0.5–1 tablet Meprobamate x 3) and an anticholinergic drug to quell commonly experienced hunger pangs (1–2 tablets Secergan x 3) (Ejrup & Wikander, 1959b). However, further experimentation continued where, for example, the use of lobeline tablets was combined with that of injections. Also, basing the 10-day cure on nicotine injections (6mg up to 18mg) was tested under controlled conditions on over 100 patients. This led to the tentative conclusion that, compared to lobeline, larger doses of nicotine were required to combat cravings and achieve the same feelings.
of satiation (Ejrup & Wikander, 1959a, p. 2031).

A further advantage of lobeline over nicotine was claimed to be its ability to induce an ‘antabuse effect’ if patients continued to smoke while taking the cure. While nausea and vomiting could be interpreted as negative side-effects of lobeline treatment, Ejrup sought to argue that these commonly experienced symptoms represented a further advantage of the drug. Lobeline could be presented as working to both rewarding and aversive effect on smoker/patients helping them to abstain from tobacco use (Ejrup & Wikander 1959a, p. 2033). Furthermore, as controlled trials of both lobeline and nicotine injections alike continued to generate a strong placebo effect, Ejrup also sought to argue that injections in themselves could be considered valuable tools of smoking cessation due to their observable powers of positive suggestion (Ejrup & Wikander 1959a, p. 2025).

By the end of 1959 Ejrup could claim to have supervised the treatment of approximately 4,000 smokers at the Stockholm clinics. Due to continuous refinement of the 10-day cure he could also attest that now as many as 85 % of smoker/patients had stopped smoking completely after receiving the cure (Tobaken och Vi, 1960, p. 19). At this time Ejrup could also publish findings of a follow-up study conducted in relation to 1012 smokers treated between December 1957 and July 1959 (Ejrup, 1959b). These patients were contacted 1 month, 3 months and 6 months after completing the cure. The results of this study showed that relapse to smoking was highly commonplace and especially within 3 months of taking the cure. Of those who had stopped smoking completely by the end of the cure only 67 % still did not smoke after 1 month; 51 % after 3 months and 44 % after 6 months (Ejrup, 1959b, p. 2257). In the first instance, Ejrup did not see these results as signalling the failure of lobeline treatment but as suggesting the need for further expansion of polyclinical activities; the clinical monitoring of smoker/patients after they have received the cure; further advice on issues such as weight gain in connection with smoking cessation and renewed opportunities to take the cure (Ejrup, 1959b, p. 2261).

Having initiated the treatment of several thousand smokers between 1955 and 1960, Ejrup argued that in total, approximately 150,000 Swedish tobacco users were in need of clinical assistance. This still ‘small and limited’ group of tobacco users encompassed not only all those suf-
ferring from medical conditions aggravated and compounded by tobacco use, but also all of those who had ‘lost control’ over their tobacco consumption (Ejrup, 1959a, p. 1910; Ejrup & Heed 1959, p. 75). Like the minority of alcohol users who fall victim to alcoholism, so Ejrup claimed, the minority of tobacco users he was dedicated to helping should be recognized as nicotinists in need of treatment for their nicotinism (Ejrup, 1964). He argued that regardless of the on-going debate about the relationship between smoking and lung cancer, tobacco users who had lost control of their tobacco consumption and succumbed to the disease ofnicotinism were in obvious need of medical assistance (Ejrup, 1959a, p. 1904). In this context, Ejrup sought to take advantage of the already established and recognized figure of the ‘chain-smoker’ claiming an identity between this category of smokers and nicotinists. Observing those who had relapsed to smoking after the lobeline cure, Ejrup pointed out alcoholics and single women as particularly prone to fall victim to nicotinism (Ejrup, 1959b, p. 2259). Another highly vulnerable group was identified to be child and teenager smokers who deserved to be given priority access to injection treatment (Ejrup, 1961, p. 19). Addressing the tendency of tobacco use among these groups to quickly degenerate into a form of ‘euphomania’ or ‘narcomania’, Ejrup saw the development of lobeline treatment for this limited population as resembling the necessary provision of insulin injections for diabetics (Ejrup & Heed, 1959, p. 20, Ejrup, 1961, p. 19).

So without question, Börje Ejrup was far more successful than Lennox Johnston at actively problematizing smoking as nicotine addiction at the end of the 1950s: at bringing smoking as nicotinism ‘into the play of truth and falsehood’ and setting it up as a collective object of concern through the invention of the smokers’ clinic. While Johnston (1957, p. 86) explicitly rejected the idea that lobeline (or any other drug treatment) could speedily cure the disease of nicotine addiction, Ejrup appeared able to provide mounting evidence of its efficacy. Injecting smokers with lobeline appeared to enable Ejrup to bring the problem of nicotinism to public light in the very process of gaining therapeutic mastery and control over it. However, having won significant public and medical recognition for his ability to pioneer a drug cure for the drug problem of smoking, Ejrup found his innovative treatment programme coming under growing criticism as it was adopted by other doctors.

The success and failure of lobeline as an anti-smoking device

The Swedish doctors who immediately followed Ejrup and set up further lobeline treatment clinics failed to achieve the same encouraging results and started to express their doubts concerning the virtues of the cure. Already in 1957, a doctor working at a sanatorium south of Stockholm initiated a controlled trial of the 10-day cure for a group of 38 smoker/patients suffering from tuberculosis. While 9 out of 20 of his patients receiving lobeline reduced their smoking, only 2 stopped completely which was far fewer than expected (Sterky, 1957). However, even more disappointing were the results achieved when company doctors started experimenting with Ejrup’s treatment programme. Attracted
by the publicity that Ejrup had initially drawn, several large industrial concerns expressed an interest in offering smoking cessation programmes to their workers. Two such concerns were ASEA in Västerås and the Volvo-Penta factory in Skövde and both developed plans together with Ejrup and AB Ferrosan to carry out clinical trials of the lobeline cure on initial groups of workers (Lokander, 1959; Yllö, 1959).

In each case, advertisements were placed in company newspapers asking for volunteers to take part in the trials and within a couple of days large numbers had signed up in both locations. At ASEA 361 workers were accepted to take part in trials and 100 at the Volvo-Penta factory. The Helsingborg-based pharmaceutical company AB Ferrosan assumed responsibility for co-ordinating the trials as they were interested in further exploring the market potential of lobeline treatment for which they had already created a new brand name: Lobnico. However, the results of trials indicated Lobnico to be no more effective than the placebo in influencing smoking behaviour. At ASEA, more workers stopped smoking when receiving the placebo (26%) than when receiving the Lobnico (19%). Also when asked to rate their subjective feelings concerning treatment and its effects on tobacco cravings more or less identical responses were given by the two trial groups (Lokander, 1959, pp. 2083–2085). Similarly, workers at the Volvo-Penta factory responded in more or less identical fashion to treatment with Lobnico and the placebo as more than 50% of both groups quit smoking by the end of the cure. Again, both trial groups offered roughly the same subjective evaluation of the treatment and also relapsed back to smoking in comparable ways during the following months (Yllö, 1959, pp. 2141–2143). Because of these unconvincing trial results, the company doctors Lokander and Yllö both decided to terminate experimentation with the Lobnico cure.

Ejrup made strenuous efforts to popularize the 10-day lobeline cure by developing a continually updated treatment protocol which could be conveniently distributed to interested doctors wishing to adopt the treatment. He claimed that at least 150 general practitioners around Sweden had taken up the cure and offered it to their patients by the end of the 1950s (Ejrup, 1959a, p. 1903). However, there remains no available documented evidence confirming this claim. Gaining professional publicity, Ejrup succeeded in 1959 in co-ordinating the publication of a series of six articles in the “Swedish Medical Journal” describing experiences with the cure. Unfortunately for Ejrup, this series ended up including the more negative reports from Lokander and Yllö. In the same year, Ejrup collaborated with a journalist who had successfully quit smoking through the 10-day cure to co-author the book _Konsten att sluta röka_ (“The Art of Quitting Smoking”). This volume outlining the nature of the smoking problem; the virtues of the lobeline cure and offering a diary of patient experiences was subsequently given to smoker/patients as another component included in the price of the 10-day cure package (Tobaken och Vi, 1962, p. 29).

In 1960, Ejrup accepted a research post in the United States at the Bellevue Hospital, Cornell University in New York. Upon his leaving Stockholm the lobeline treatment programme was radically scaled down and retreated back into premises
within the Karolinska hospital where a Dr. Birger Grape was made responsible for overseeing treatment (Tobaken och Vi, 1962). Ejrup was subsequently persuaded by the American Cancer Society to establish a smoking cessation clinic in New York based on the 10-day lobeline cure. This clinic was in operation between 1965 and 1967 but never achieved the level of success which had been ascribed to the Stockholm clinics (Schwartz, 1969, p. 486). Nevertheless, Ejrup was a prominent speaker at the 1st World Conference on Smoking and Health held in New York in September 1967 where he outlined again the advantages of his lobeline treatment programme which by that time had been completely abandoned in Stockholm (Ejrup, 1967).

After Lobeline and before Nicorette: The Swedish interregnum in the development of nicotine substitution therapy – 1963–1969

As Foucault (1984, p. 389) famously argued, processes of problematization are typically associated with multiple and even contradictory forms of response to the same perceived difficulties. These varying responses imply alternative grids of analysis and evaluation; favouring different forms of knowledge and expertise combined with different techniques and codes of practice. Johnston’s call for militasnt public actions by non-smokers and Ejrup’s smokers’ clinic can be seen as two original responses based on a similar understanding of smoking as a drug problem. While Johnston’s call mobilized few others than himself at the time, Ejrup’s lobeline treatment programme enjoyed impres-
one remaining smokers’ clinic in Stockholm after the abrupt departure of Ejrup was handed over to the psychiatrist Ture Arvidsson in 1963 (Arvidsson, 1972, p. 41). Having failed himself to stop smoking through the use lobeline injections, Arvidsson dismantled Ejrup’s 10-day cure and reassembled the smokers’ clinic using innovative forms of experimental psychology. If Ejrup had created a reputation for Sweden as leading the world in the medical treatment of smoking, Arvidsson was happy to present his clinic as incorporating important lessons from abroad, and the UK in particular (Arvidsson, 1965a).

While rejecting lobeline and the use of drug replacement therapy for treating smoking, Arvidsson did not completely discount the role of nicotine in maintaining the smoking habit. In fact, his problematization of smoking showed striking similarities to that of Johnston combining a vision of drug dependence with a commitment to innovative forms of psychotherapy. Speaking of nicotine, Arvidsson (1966, p. 12) claimed that ‘it would be strange if a powerful nerve poison like nicotine delivered in considerable quantities over perhaps many years did not give rise to withdrawal symptoms when it’s use is abruptly terminated’. Thus, while acknowledging an element of physical dependence on nicotine underlying the smoking habit, he chose to envisage this more specifically as a question of *toxicomania* or ‘poison dependence’ (gifterberöende) where nicotine was identified as the decisive toxin (Arvidsson, 1967, p. 15; 1972, p. 44). In this light, his smokers’ clinic was to be concerned with the work of detoxification deploying the most advanced tools experimental psychology had to offer.

So compared to Ejrup, Arvidsson designed a longer cure of at least 14 days stretching to a month and including moments of both individual and group therapy. Most visits to the clinic took place at the beginning of the cure. These visits would be structured around daily injections accompanied by supportive and motivational conversations with the nurse supplying treatment (Arvidsson, 1972, p. 41). Injections remained vital components of treatment, but as important tools of suggestion *not* medication. Instead of lobeline, smoker/patients were injected with small doses (0.1–0.2mg) of methylscopolamine designed to produce dryness in the mouth and a sensation of having smoked in excess (Arvidsson 1965b, p. 3; 1967, p. 15). After an initial period of daily injections, weekly group therapy sessions were introduced where each of the 10–20 participants in every group was given the opportunity to collectively discuss their smoking problem. The last 20 minutes of each session were then devoted to group hypnotherapy where positive suggestions were used to strengthen the resolve of participants to quit smoking (Arvidsson, 1972, p. 41).

By the end of the 1960s, Arvidsson was treating approximately 500 smoker/patients a year at the Stockholm clinic which had recently moved to premises in the southern suburb of Grubbängen. Reflecting Ejrup’s prior experience, treatment typically helped people to quit in the short-term, but after one year the great majority had relapsed to smoking (Arvidsson, 1972, p. 43).
The invention of Nicorette gum and its early clinical embrace 1968–1971

After Ejrup had kick-started the medical treatment of smoking behaviour in Sweden at the end of the 1950s, this process only idled along during the 1960s. It was not until mid-decade that smokers’ clinics started to appear in other Swedish cities outside of Stockholm, and even then without lasting success. A pilot clinic was established in Göteborg in 1966 experimenting with lobeline treatment before converting to Arvidsson’s therapeutic programme. However, this venture was closed down after only 6 months as anti-smoking treatment became reserved for hospitalized heart patients alone (Wilhelmsen, 1972, p. 47). Starting in January 1966, an open clinic was also established at the University Hospital in Lund again closely following Arvidsson’s clinical designs. In operation for only 18 months, this clinic was also closed down due to poor treatment results (Wetterqvist, 1973). If lobeline had been rejected as a viable tobacco substitution therapy, nothing had been found to replace it at the centrepiece of the anti-smoking clinic.

It was at this juncture in the late 1960s that the vision of ‘nicorette’ as a therapeutic substitute for the cigarette was born. This was communicated in a letter sent by two colleagues at the Department of Physiology at Lund University to the director of research and development at Leo Pharmaceutical Company in nearby Helsingborg (Ahlin & Lundgren, 2002, p. 269; Fernö, 1977). The idea of nicorette arose out of the already established cigarette substitution practices observable among certain professional groups in Sweden such as aviators, doctors and submariners. Obliged to suspend smoking for shorter or longer periods of time due to force of occupational circumstance, certain members of these groups gave up smoking by switching to the use of Swedish oral tobacco products. Thus, the Leo Pharmaceutical Company was presented with the entrepreneurial challenge of using such tobacco substitution practices as a source of inspiration for developing a pharmacological means of administering nicotine (nico-) in the ‘right’ (rätt) way replacing and resolving the ‘wrong’ toxic drug delivery of cigarettes (Fernö, 1994, p. 1224).

Given the rejection of lobeline treatment and the U.S. Surgeon General’s explicit scepticism regarding nicotine substitutes implementing the nicorette vision in Sweden was destined to be a steep uphill struggle throughout the 1970s. Adopting the nicorette vision not only meant accepting the reality of smoking as nicotine addiction, but also entertaining the idea that such addiction can be disarmed and even rendered therapeutic through innovation in drug delivery (Fernö, Lichtneckert & Lundgren, 1973; Elam, 2012). In other words, the nicorette vision meant recognizing nicotine as the pharmakon – the combined poison and remedy residing at the heart of the smoking problem. Ove Fernö, the head of research at Leo, drew on such an understanding when he summarized the ambition of nicorette as that of ‘driving out the devil with Beelzebub’ (Ahlin & Lundgren, 2002, p. 269). Consequently, it is no surprise to find that the directors of the Leo Pharmaceutical Company were initially highly sceptical about pursuing the development of medicinal nicotine. Such scepticism appeared justi-
fied when the first attempt to register nicotine chewing gum as a medical product in Sweden failed in 1974, and when subsequently the Swedish Tobacco Company expressed an interest in taking over the commercialisation of the product (Elam, 2012).

Under these historical circumstances the single most important factor which secured the long-term success of Nicorette chewing-gum as the first global nicotine replacement therapy was its early and persistent clinical embrace. The smokers’ clinic which had been in operation in Lund during 1966–1967 was re-opened in 1970 in order to pursue the first clinical trials of nicorette gum. The tentative results of these trials were subsequently presented at the 2nd World Conference of Smoking and Health in London in 1971 (Ohlin & Westling, 1972; see also Brantmark, Ohlin, & Westling, 1973). In similar fashion to Ejrup’s first lobeline trials in 1955, the first trials of nicorette gum in 1970–1971 immediately drew a wave of public and media interest triggering a second coming of the smokers’ clinic in Sweden re-arranged to promote the use of the new therapeutic tool (Fernö, 1994, p. 1219). The Leo Pharmaceutical Company surpassed the limited success of Ejrup’s lobeline treatment by forming a series of crucial clinical partnerships advancing the development and refinement of nicotine replacement therapy. The first of these partnerships was with Håkan Westling who co-ordinated the Lund smoking cessation clinic and later ones of particular significance were those with Michael Russell who instigated vital trials of Nicorette gum in the UK and with Murray Jarvik who initiated clinical experimentation with NRTs in the United States (Russell, 2004; Jarvik, 2001; Elam, 2012). From 1970 onwards, the smokers’ clinic and NRTs entered into the long-term service of each other propagating the reality of smoking as nicotine addiction on to a global stage.

**Conclusion**

In this paper an attempt has been made to clarify further how scientific confirmation of the identity cigarette smoking as a major contemporary drug problem during the 1980s was preceded by a rising tide of clinical and pharmaceutical innovation stretching over several decades dedicated to treating smoking as a problem of nicotine addiction. This gathering tide of innovation carried the smokers’ clinic and NRTs into the world, both of which were originally invented and pioneered in Sweden. The smokers’ clinic addressing smoking as a problem of nicotinism was born in Stockholm in the mid-1950s, and NRTs designed to deliver nicotine (nico-) in the right (rette) way were first conceived of in Helsingborg and Lund at the very end of the 1960s. NRTs provided the therapeutic core upon which the smokers’ clinic could be launched anew in Sweden during the 1970s after the failure and abandonment of lobeline substitution therapy by the mid-1960s.

Illuminating further the early diseasing of smoking as a drug problem in Sweden after 1955 encourages us to reassess the relative contribution of the British doctor Lennox Johnston in first drawing broader public attention to the reality of smoking as nicotine addiction. While the importance of Johnston’s novel practices of auto-experimentation in the 1940s and 1950s cannot be completely discounted, the cur-
rents of clinical and pharmaceutical innovation set in motion in Sweden by figures like Börje Erjup, Ove Fernö and Häkan Westling during the 1950s and 1960s have been without doubt of greater lasting significance for making nicotine addiction into the global matter of concern and attention it is today.

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