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Chapter 23

Reorganising Chronic Disease Management: Diabetes and Bureaucratic Technologies in Post-War British General Practice

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On 1 April 1990, the third Thatcher administration imposed a new contract upon British general practitioners (GPs). As part of its plans to remake both the National Health Service (NHS) and UK public health, the Conservative Government made available to GPs for the first time specific remuneration for undertaking special health promotion clinics - a service which covered a range of chronic conditions and their risk factors.[1] By 1993, subsequent Conservative governments had introduced distinct incentives for `chronic disease management' clinics, issued protocol to outline process measures required for chronic disease payments, and incorporated a number of chronic diseases in new target-based public health programmes.[2]

Taken together, these initiatives marked the first major and sustained policy concern with `chronic disease' at the central government level in Britain. As recent work has shown, of course, this was not the first time that policy-makers had demonstrated an interest in long-term sickness or in specific chronic conditions.[3] The care of the `chronic sick', populations of largely elderly and infirm patients institutionalised in Britain's hospitals, had been a service concern since at least the 1940s.[4] The GP policies were, nonetheless, the first time that the Department of Health had based the reform of services around chronic disease as a distinct - if elastic - category and object of policy. It was a trend, George Weisz makes clear, which gained a contested momentum over the 2000s, in line with various international developments.[5]

Below the level of central government policy, however, concepts of chronic disease - and the organisational challenges of long-term care - had been influential in encouraging reform of local services for decades prior to these changes. New models for chronic disease care based in general practice, though often closely integrated with hospital clinics, had first emerged in the early 1970s, and began to spread widely during the 1980s. In diabetes, the new systems of care were predicated upon proactive disease surveillance of `routine' patients in community settings, with specialist hospital outpatient clinics reserved for consultation or more `complicated' cases. GPs slowly assumed the position of the head of the `primary care health team', having direct access to nursing, ancillary and clerical staff. Finally, the whole system was facilitated by the deployment of numerous forms of managerial bureaucratic instruments, ranging from patient register and appointment systems (allowing the management of time and attendance), to codified treatment protocol and mobile clinical records (directing labour and facilitating shared data storage and retrieval).[6] Similar developments not only occurred in relation to hypertension and asthma during the same decades, but clinicians also consciously drew upon experiences across conditions.[7] Shared `natural histories', intellectual networks, and sites of care facilitated the exchange of organisational and bureaucratic technologies.[8]

Using a case study of non-insulin-dependent diabetes mellitus, this chapter examines the emergence of this disease management model in post-war Britain. Whilst recognising the influence of shifting epidemiological patterns, it nonetheless situates developments in relation to resource constraints, professional politics, and innovations in medical knowledge and technology. In the face of stagnant resources, consultants felt that diabetes care was no longer sustainable as a solely hospital specialty, especially as

changing diagnostic and therapeutic patterns transformed the character of both disease and specialty clinic. The proposed solution of moving greater patient care to - and systematising patient management in - general practice was only accepted nationally because it fitted political and ideological projects of general practice reform. By the 1980s, discussions of diabetes care – and its proactive and bureaucratised surveillance of risk - increasingly mapped onto broader considerations of modern general practice. And by 1990, new models of GP care received formal political backing.

In telling this story, this chapter seeks to provide insight into the adaptation of British health services - and general practice in particular - to the challenges of chronic disease after the Second World War. Whilst historians have produced excellent studies of how public health ideology and central government policy engaged with chronic disease in the post-war period, little has been written in this regard about service innovation.[9] Similarly, although there are numerous accounts detailing the political and institutional histories of the NHS, its scholars have largely neglected the study of post-war general practice and the emergence of new models of care outside of key policy years.[10] Diabetes mellitus provides an effective case study for many of the key developments in post-war service changes in relation to chronic disease. This is not because of any essential features of the disease itself, but rather because doctors discussed approaches to diabetes management as models for other conditions.[11] Moreover, as diabetes care became embedded within visions for reforming general practice more broadly, its study also opens a vista onto the broader transformation of general practice as a distinct form of medicine.

Diabetes and hospital management

By the early 1950s, diabetes was considered a metabolic disorder or syndrome, primarily caused by a deficiency of, or insensitivity to, insulin.[12] The cardinal markers for the disturbance were taken to be high levels of glucose in the blood (hyperglycaemia) and urine (glycosuria), whilst clinicians had described a range of prominent symptoms in relation to the condition (including excessive urination, thirst and hunger) across a number of centuries.[13] Since the 1930s, doctors had also noted patients with diabetes developing a plethora of renal, micro- and macro-vascular `complications' over time, so that by the 1950s major concerns existed about neuropathy, nephropathy and retinopathy in patients as much as their liability to various types of coma.[14]

It was in relation to coma, along with age of onset and weight, that clinicians roughly `typed' patients from the 1920s onwards. That is, while researchers had posited various causes for (and exceptions to) such a division, doctors tended to discuss patients as either 'severe' - typically young and thin at onset, and needing insulin to prevent rapid hyperglycaemia, wasting and ketosis - or 'mild' - individuals who were largely overweight and above 45 years old at onset, but who were able to maintain normal metabolic function through various forms of diet alone.[15] Alternative terms for dividing patients existed over the post-war period – for instance, `juvenile' and `maturity-onset' diabetes, and later 'insulin-dependent diabetes mellitus' and 'non insulin-dependent diabetes mellitus' – but in essence it was a patient's symptoms, ketones, and response to treatment that determined clinical course and categorisation.[16] The development of oral hypoglycaemic drugs during the 1950s further consolidated therapeutic and clinical divisions, proving efficacious in only certain classes of supposedly `mild' patients.[17]

It was in relation to the clinically more challenging severe patients that specialist clinics had been developed in Britain after the introduction of insulin therapy in 1922.[18] On the one hand, clinics were praised for their research and teaching potential, and the invention of insulin therapy helped generate the financial and cultural capital necessary for institutionalising specialist research and practice.[19] On the other, interested doctors justified these clinics into the 1940s and 1950s by suggesting that their concentration of expertise and laboratory facilities were central to maintaining patient health.[20] Such claims recognised that management of diabetes had come to centre on long-term monitoring of various metabolic and clinical markers of disease progression, despite the growth of significant doubts about the long-term benefits of 'normoglycaemic' control over previous decades.[21] And clinics, at least initially, were designed to facilitate more organised access to the required laboratory facilities for surveillance, as well as to offer ongoing consultation and education for patients in their self-management.[22]

Although GPs continued to offer varying levels of care, by the 1950s hospital clinics had been widely - if reluctantly - accepted as the ideal place for long-term and specialist surveillance of patients with diabetes.[23] GPs and hospital clinicians alike noted how 'diabetes mellitus…and its management is gradually being taken out of the hands of the general practitioner by the establishment of diabetic clinics', a trend that even resentful GPs described as a 'relief' in terms of workload.[24] Such observations find support in the rapidly increasing numbers of clinics through the 1940s and 1950s, rising from 40 clinics in 1940 to 194 in 1955.[25] The importance of clinics and specialist supervision received recognition from the Ministry of Health, which issued guidance on the regional organisation of in-patient and out-patient services in 1953.[26]

The 1950s, however, in many ways marked the zenith of the clinic's reputation. Over the following decade and a half, doctors began to note a number of problems with clinic practice. Whereas doctors had previously lauded the clinic's concentration of patients, many clinicians now voiced concerns about the strains that such centralisation placed on care as patient numbers grew. At one major centre in the Leicester Royal Infirmary (LRI), for instance, registered attendances rose from 6379 in 1949 to 9854 in 1965.[27] It was in response to similar growth that John Malins, an eminent mid-century authority in the famous Birmingham clinic, suggested that: 'the size of the diabetic problem…is apt to oust all other work unless the intake of patients is strictly controlled - no easy matter', and 'as a result the clinic is apt to become large and unwieldy'.[28] In part, such increases may have resulted from patients living longer in line with new therapies and improved facilities.[29] However, greater detection and referral from general practice also played a role, with the average number of *new* patient attendances yearly at the LRI increasing over 60 per cent from 286 for 1949-52 to 483 for 1959-62.[30]

During the 1950s and 1960s, clinical and public health doctors identified a range of factors supposedly responsible for the increase in the incidence and prevalence of diabetes. They implicated more sedentary lifestyles, rising affluence, rapidly altered diets, the `conquest' of infectious disease, and a general ageing of the population as potential causes.[31] Such explanatory frameworks formed part of wider concerns with reframing public health in terms of both chronic disease and lifestyle change, a development itself intimately tied to the creation of the new tools of risk factor epidemiology.[32] Increases in clinic patient load also had some relation to the development of new diagnostic technologies, with two innovations in particular worthy of mention. The first was a new heat-producing tablet, available from 1944, which

removed the need for doctors to measure solutions and heat urine for testing.[33] The second, a variety of enzyme-loaded paper, was developed in the 1950s and allowed practitioners to identify initial glycosuria by the strip changing colour when dipped in a urine sample.[34] Although each took time to become widely available to GPs, both nonetheless made initial detection of diabetes considerably easier, with one trial even suggesting that tablets more than halved testing times.[35]

The enzyme-loaded strips in particular were central to a wave of major diabetes population surveys taking place in Britain between the early 1950s and mid-1960s, with substantial effects on awareness and understandings of diabetes. The surveys had an international impetus. Many were inspired by equivalent American undertakings in the 1940s, and they later formed part of efforts to assess global prevalence through research networks established as part of colonial expansion.[36] They reflected, nonetheless, a growing interest in epidemiological surveys of chronic disease in Britain, and were underpinned by the significant growth of post-war finance for biomedical research.[37] In the short term these surveys were designed to assess the extent of unmet need for health-care services, and to hint at potential physiological precursors or socio-cultural causes to be longitudinally assessed.[38] With regards to diabetes, they uncovered significant numbers of undiagnosed cases to add to local clinics, roughly doubling the number of patients in any given community.[39] In the longer term, increased numbers were likely compounded by raised professional and public awareness. In the national press, specialists increased estimates of national prevalence from between 3 and 6 cases per thousand population in 1950, to around 12 per thousand by 1960, and the potential existence of significant amounts of hidden disease was widely reported.[40] National figures, along with the novel notion of submerged disease, concerned the profession and

were repeated in the press. The subject of diabetes detection also featured more prominently at national medical conferences and in major medical journals, including one exchange in *The Lancet* during 1963 taking in seven letters over six editions and three months.[41]

Unfortunately for hospital doctors, the rising numbers of patients under their care were not matched by increasing finances. Resources under the new National Health Service were scarce and under intense political scrutiny.[42] Initial projections for resource requirements had been wildly inaccurate, and the resulting disconnect with actual spending frightened politicians into introducing new rationing measures and subjecting the Service to consistent financial review.[43] Whilst the most politically significant investigation into NHS expenditure during this decade - the Guillebaud Report (1956) - defended the NHS as excellent value for money, searches for savings in resource use intensified over subsequent decades.[44] By the 1960s, this scrutiny had turned to a search for improved management of expensive hospital facilities, with voluntary health organisations and central government alike examining means for better organisation of resources and outpatient clinics.[45] Under such circumstances, the retention of large numbers of patients under specialist care became both financially challenging and politically problematic. Concern with overcrowding in outpatients departments peaked in the early 1970s, and led *The Lancet* to blame consultants for confusing quantity with quality in assessing their worth, and for undertaking work which was 'quite unnecessary'.[46]

In the face of this combination of rising patient numbers and strained resources, clinicians became increasingly dissatisfied with both standards offered to patients and the conditions of their work. Initial attempts to compensate for changed conditions

involved drafting in more junior staff to assist. However, their characteristically short tenures broke the continuity of care that long underpinned the logic of clinics.[47] Equally, the drive for efficiency in terms of patient turnover left practitioners disgruntled, and they claimed that 'the aims of treatment were becoming increasingly frustrated' in light of resultant 'overcrowding'.[48]

Hospital clinicians also grew tired of the more 'routine' patient being seen. These tended to be patients on diet alone or oral drugs, with physicians complaining that their 'management is not difficult and they would have been discharged to their general practitioner if it was known they would have regular supervision of their diabetes in the practice'.[49] This tilting towards the predominance of `mild' patients had been noted in the early 1950s, but was possibly accelerated by the application of the survey and its mutation of diabetes into a less symptomatic and more quantitative disease entity.[50] Physiological research, that is, had long shown that there was no single norm for average blood glucose levels in humans, and even during the 1920s and 1930s, models of diabetes had suggested that clinical symptoms appeared often only after a long asymptomatic onset.[51] However, along with uncovering `hidden' cases of clear diabetes, new surveys suggested that far more people experienced blood glucose levels outside a clearly-bounded `normal range' than had been expected.[52] The meaning of these quantitative deviations was unclear, correlating neither with symptoms, clear lesions, nor a definite increased likelihood of pathological change in the future.[53] Indeed, whilst some patients with `abnormal' results might go on to develop symptomatic diabetes, when retested a number might revert to `normal' tolerance.[54]

When found in individuals, these 'borderline' results left clinicians unclear as to what level of hyperglycaemia could be considered pathological, especially in older age

groups where glucose tolerance appeared to decline.[55] Conceptually borrowing from hypertension, some clinicians and researchers in the mid-1960s even wondered whether 'benign and malignant hyperglycaemia would be preferable terms' to diabetes.[56] By 1980, follow-up studies of the relationship between persistent hyperglycaemia and complications in populations would fix diagnostic criteria for individuals in relation to quantitative risk for diabetic retinopathy.[57] In the meantime, however, it is possible that this changed character of disease and diagnostic uncertainty led to even more `mild' hyperglycaemic patients appearing in clinics, even if symptoms continued to form the major prompt for diagnosis into the 1970s.[58] With such patients more common than before, specialists complained that they were unable to focus on the 'difficult problems' suited to their training.[59] Experience, efficiency drives and an expanded disease concept had turned diabetes into a routine disease; such a change frustrated hospital doctors who felt such patients less requiring of their skills than others.

New models of care and bureaucratic tools in general practice

By the late 1960s and early 1970s, a number of hospital consultants and diabetes specialists had decided that easing the pressures on clinics would require more radical solutions than tried previously, primarily involving moving patients out of the clinics. At the same, there were GPs who felt that standards in general practice could also be improved through better organisation and co-operation, particularly where GP responsibility for patients had been retained.[60] Through such drives for reform, diabetes care underwent significant change during the following decades.

In terms of clinics, during the 1970s and 1980s physicians tried a number of systems to relieve patient-load, and to extend advice and educational facilities outside of

clinic hours.[61] The most widely pursued innovation in care during this period was that of GPs assuming greater responsibility for the care of routine patients, and those deemed well-managed on insulin. In most instances, the initial step in establishing new forms of care came from consultants reaching out to GPs. Programmes for GP education and care protocol thus developed out of friendly collaboration with GPs.[62] Where such cordiality did not exist, however, hospital-led schemes might meet resistance from local practitioners and it was here that specialist nurses were essential, building relationships and refining schemes in situations where tensions existed.[63] As with other forms of service innovation, local politics and culture were clearly important in influencing outcomes and trajectories at a micro-level.[64]

The form of scheme that GPs and consultants entered into varied according to these local circumstances, and could involve multiple practices joining with a clinic in a large scheme, or establishing individual relations between consultant and GP in smaller ones.[65] Likewise, the organisation of GP-care itself also differed across practices. Some practitioners sought to run special `mini-clinics' in protected surgery time, headed by one or two interested GPs if operating within a group surgery. Here, patients were registered and recalled for regular follow-up consultations and tested at their local practice in a single sitting. Nursing staff would undertake patient education and take samples, whilst GPs performed more complex screening procedures, analysed results and offered advice. Patients were generally requested to attend at intervals of three to six months for at least glucose, ketone, weight, and visual acuity tests, with a special check-up - including screening for complications – performed annually.[66] A mixture of automated testing equipment and contractual arrangements for direct access to off-site

diagnostic facilities fostered independence, though some mini-clinics directly involved hospital staff.[67]

Other schemes, by contrast, encouraged all GPs to look after their own listed patients. Here, the routine surveillance of patients would be undertaken during regular surgery time and the link between patient and single practitioner would not be broken. In perhaps the most comprehensive of these shared care schemes, established in Poole during the early 1970s, some patients had no direct contact with the hospital, except for visits to the laboratory for glucose estimations. The rest of the surveillance tests and consultation were performed in surgery time, albeit with connections maintained to community opticians, whilst community nurses and health visitors were also attached to surgeries for domestic visiting and dietetic advice. Technological innovation made possible new forms of team work - with communication between care sites achieved via computer, as well as letters and patient-held records - whilst all practitioners in the scheme signed up to shared care protocol that detailed responsibilities, referral criteria, and the aims and metabolic targets of therapy.[68] Similar models were tried elsewhere, but GPs were able to organise their practice idiosyncratically so long as minimum standards of care were agreed and shared records were completed.[69]

As time passed a number of other alternatives were created, such as travelling clinics for more remote communities, and diabetic days or hours in certain London surgeries.[70] Learning about these innovations through publication, education, or participation in professional conferences, some GPs sought to raise their own standards of care for diabetes patients, and had adopted some of these organisational forms independently of clinics.[71] Although more isolated from clinic teams, some GPs might still maintain access to hospital or health authority expertise, such as dietetic advice or

chiropody care.[72] Along with practice nursing and secretarial staff, that is, some GPs operated as the head of a health-care team with referral as an option for more specialist services.

Central to new forms of GP-based care were a series of tools designed to make surveillance of the patient population more effective, and to monitor and reform professional activity. Common to almost all shared and structured general practice care programmes, for instance, were patient registers to help track the size of the observed population, and recall systems – buttressed by home visits to non-attenders - to ensure regularity and frequency of patient attendance.[73] Similarly, advocates of these schemes recommended the use of highly structured patient records, generally comprised of a checklist of tests to be undertaken, a follow-up section for results to be recorded, and additional spaces to record treatment notes and patient information.[74] These specially designed cards would allow for 'quick accurate recording and recall of information', thus making it easier to account for a patient's progress and facilitate communication between staff members and over time.[75] Moreover, along with the agreed practice protocol, designers of these records believed that they would improve the standard of care, directing professional action and providing 'built in reminders so that both patient and professional will remember to carry out all the routine and sometimes tedious checks which are part and parcel of good diabetic care'.[76] As well as helping to review the care of individual patients, these records therefore facilitated the shift of surveillance onto practitioners. Practice protocol set team responsibilities and 'the basic standard for general practitioner and hospital care', whilst records were considered key to providing the raw material for regular and research-based audits.[77] This was so much so that the quality of record completion was a prominent audit measure or discussion point in

research assessments of GP care.[78] Although such highly structured, reviewed and bureaucratised care might be thought of as anathema to professionals who so frequently spoke of clinical autonomy, as discussed below, this organisation of care was constructed as one of the major benefits to systematic general practice involvement in diabetes management.

The extent of GP engagement in structured independent, shared or community diabetes management during subsequent years is hard to uncover. From archival material and publications it appears that GP-based care had spread right across Britain by 1990, with references to practice in: Kirkcaldy and Stirling in Scotland;[79] Newcastle,[80] Manchester,[81] and Sheffield in the north of England;[82] Wolverhampton,[83] parts of Staffordshire,[84] Birmingham and Warwickshire,[85] Ilkeston,[86] Leicester,[87] Nuneaton,[88] and parts of Oxfordshire in the English midlands;[89] Norwich,[90] Kings Lynn,[91] Newmarket,[92] and Ipswich, in the east of England;[93] London,[94] Southampton,[95] and parts of Surrey and Hampshire in the south of England;[96] Poole,[97] Bristol,[98] and Exeter in the South West;[99] and Cardiff,[100] the Upper Afan Valley,[101] Powys and Gwent in Wales.[102] Thus, whilst initial experiments appeared in the English midlands in relation to expertise in the Birmingham area, by the early 1990s shared and structured care in general practice had spread widely - if not necessarily deeply - beyond this base.

Diabetes and general practice management

Why did GPs want to take on such care? And what does the spread of GP-based diabetes management tell us about the changing basis of post-war general practice? Of course, like hospital clinicians, the authors of early texts about general practice diabetes care believed that GP involvement would raise standards, and certainly make care more

convenient for patients. These doctors pointed to the inefficiency and depersonalisation of 'the diabetic clinic scrummage', highlighting its fleeting consultations, costs to patients, and broken continuity of care.[103] They deemed general practice care, by contrast, to be far more amenable to patients, who would have shorter waiting times and greater 'comfort'.[104] Familiarity with medical teams, proponents suggested, would also make oversight more regular, and thus more effective.[105] And indeed, the willingness of patients to accept greater GP involvement was itself important in helping new schemes gain momentum.

Yet, these same texts frequently included references to a number of advantages for GPs themselves, highlighting a clear political and professional interest in clinical change. For instance, initially - and somewhat ironically given references to `routine' patients - hospital doctors and GPs pointed to the intellectual satisfaction gained from looking after patients with diabetes. Diabetes was portrayed as a complex condition, affecting almost every bodily system, which would provide a 'wide spectrum of experience in symptomatology, pathology and treatment'.[106] It was, according to its proponents, 'the ideal disease for the general practitioner to diagnose, observe and treat with interest'.[107] Diabetes thus sat in opposition to the supposed wave of 'trivial' cases that some felt characterised general practice, and which even resulted in feelings of 'professional humiliation' over 'wasted' training.[108] Although such feelings were not universal, strong references to work satisfaction and clinical complexity clearly sought to make capital from anxieties of inferiority and dissatisfaction, even whilst other doctors were trying to rehabilitate such trivia as central to primary care.[109]

Discursive appeals to GP interests were multivalent and it was perhaps their eclecticism that proved persuasive. Whilst at once emphasising skill, early proponents

of GP care also pointed to the need to care for the whole patient in such an 'all embracing condition'.[110] GPs knew about the intimate aspects of their patients' lives, and diabetes' status as a 'lifelong disease' combining 'symptoms and physical and biochemical findings with social and emotional problems' was therefore considered to strongly 'interest the general practitioner'.[111] Although managing social and emotional problems was clearly seen as a `skill' – and by the 1950s a skill seen as an integral part of diabetic clinic care – it was not one necessarily associated with the hospital form of clinical medicine.[112] Such references were, therefore, likely alluding to the `whole person' rhetoric associated with views that GPs might become specialists in the psycho-social medicine of individuals.[113]

As time passed, the basis of these claims transformed in line with shifting politics of, and visions for, general practice. Alongside references to patient satisfaction and improving clinical skill, some advocates for general practice care in the 1970s and 1980s began to cast diabetes as a model of proactive, preventive medicine. For example, one GP suggested that, though 'extra time is needed to run a clinic', their team felt 'that diabetics are such a high-risk group tha[t] an average of five minutes per day for prevention and treatment is an efficient use of a doctor's time'.[114] Another retrospectively agreed, suggesting that the programme for diabetes in his practice emerged due not only to 'an impression that we could do a lot better with diabetes', but also to a desire amongst his partners to 'do more about preventing people becoming ill, rather than just reacting to the crises'.[115] This began with opportunistic screening and following up care for patients with hypertension and non-insulin requiring diabetes during the 1970s and 1980s, but later took in individuals with conditions requiring similar long-term maintenance therapy, like hypothyroidism and epilepsy.

The notion that GPs should engage in preventive medicine was not new. Armstrong and Lewis, for instance, have pointed to similar claims on prevention during the early twentieth century, with Armstrong suggesting that engagement with epidemiology and social medicine resulted in an expanded surveillance ethos in general practice.[116] However, in terms of proactive screening for disease, it seems that resource and knowledge limitations dissuaded many GPs from engaging in anything beyond opportunistic work during the early post-war decades.[117] Furthermore, across the 1960s and early 1970s, some influential epidemiologists and public health doctors sought to link the detection and prevention of chronic diseases to the political future of the Medical Officer of Health (MOH).[118] Politically, that is, GPs faced competition for space in preventive medicine, albeit within a context where collaboration was being encouraged from both academic and practitioner perspectives.[119] After 1974, however, the role of the MOH had been abolished and public health doctors were incorporated as managers and service planners into the NHS as Community Physicians.[120] GPs were thus afforded space to move into expanded preventive health work, including chronic disease management.[121] In fact, work to improve service delivery and co-ordination in conditions like diabetes was even performed out of academic departments of community medicine and general practice, marking an institutional collaboration on public health from the old and new public health workers.[122]

That managing non-insulin-dependent diabetes in general practice was included in considerations of preventive medicine is revealing. According to the GPs above, detecting disease early was no longer itself at the centre of discussions about disease prevention. Rather, in the context of patients being considered ‘at exceptional risk’ of arterial disease, managing diabetes patients more effectively - meaning proactive,

organised surveillance and therapeutic titration - had in itself become a core component of preventive medicine.[123] The increasing centrality of epidemiological methods as clinical and public health tools was central to such a transformation. Uncovering large amounts of undetected and 'subclinical' disease, along with calculations of individual risk, cast prevention into three stages. Academic GPs and epidemiologists began to talk of primary prevention (preventing occurrence by treating a precursor state, targeting those at risk, or promoting health in the population), secondary prevention (preventing the progression of a subclinical disease into a clinical state by detecting asymptomatic cases and managing patients early), and tertiary prevention (preventing the worsening of a clinical condition into severe disability). Each stage was linked via a series of interconnected interventions.[124] In light of such discussions, interlocutors claimed that the 'poles of curative medicine on the one side and prevention on the other no longer apply', broken down in suggested webs of risk and surveillance.[125] As noted, given its serious complications and its status as a risk factor for other conditions, the detection and treatment of diabetes could be considered as secondary or tertiary prevention. Equally, targeting overweight or elderly individuals with preventive lifestyle advice as a means to avoid the condition could be classified as primary prevention.[126] But it was this division between complete prevention, and the prevention of complications that turned diabetes management itself into a preventive health activity. It was a distinction that became sharper as acceptable – meaning more large-scale clinical and epidemiological – evidence emerged to buttress traditional faith in metabolic control as a deterrent to the emergence of diabetic complications.[127]

Conclusion

Historians have long used the construction of, and responses to, specific diseases as lenses for investigating medicine and society.[128] In this chapter, I have sought to connect changing understandings of a particular disease - diabetes mellitus - with shifting strategies and models of care as a means to draw out the drivers for service innovation in a period of broad epidemiological change. By focusing our gaze in this manner, it has been possible to demonstrate that clinical and organisational change in British chronic disease care was driven by more than shifting disease profiles and demographic patterns. Rather, a combination of financial constraints within a new health and welfare system, the deployment of novel diagnostic and surveillance technologies, changing meanings of disease and work, and fluctuating professional politics all shaped and helped generate a new model of care for long-term illness.

Beyond this, however, a case study approach to disease management has also highlighted how responses to chronic disease care during the late twentieth century revolved around a process of bureaucratisation. In many respects, doctors and health care providers were building on a late-nineteenth and early-twentieth century heritage. As Steve Sturdy and Roger Cooter amongst others have noted, the development of mass health care provision - alongside concerns over population quality - generated a significant momentum for the bureaucratisation of medical care and knowledge at the turn of the century.[129] Doctors, clinical researchers, insurance bodies and states alike converged over efforts to standardise diagnostic labels and processes, as well as to divide and reintegrate bodies (of knowledge, individuals, populations and medical labour) in pursuit of maximum efficiency.[130] In post-war Britain, the need for efficiency grew ever more important under the resource-strapped NHS, whilst the integration of

clinical and epidemiological research cultures in elite institutions fostered understandings of care process as standardisable and reviewable.[131] In terms of diabetes, these pressures extended beyond the initial hospital cocoon, following chronic disease care into general practice. Now spatially redistributed, medical teams drew on well-developed bureaucratic cultures and practices in pursuit of more efficient and effective care: more tightly prescribing roles, documenting activity, and reviewing work than ever before within new hierarchies.[132] This process was facilitated by an expanding range of tools for prescription and surveillance, as well as changing political projects in British general practice.

These changes in diabetes care have had long-lasting legacies, despite research over the 1980s and early 1990s offering mixed results about their efficacy.[133] In part, this is because models of diabetes management formed a symbolic part of broader arguments about raising standards in general practice into the 1980s and 1990s. By 1985, for instance, diabetes had formed an early target for the RCGP's `Quality Initiative', and the College had begun discussing new models of care in terms of good general practice more broadly:[134]

> Teamwork and practice management are gaining recognition as essential rather than desirable for effective patient care in all types of practice, especially in the management of chronic diseases such as diabetes mellitus, hypertension and asthma, and in anticipatory care. Agreed protocols and standards, the registered list of patients, the continuous clinical record, the microcomputer, practice leaflets and the practice annual report are seen as some of the tools [central to such care].[135]

A discussion of the politics of this `quality' agenda is beyond the scope of this chapter.[136] Nonetheless, the equation of managed chronic disease care with good general practice underlined both the extent to which general practice was reforming around new sets of disease, and how far end-of-the-century visions of general practice had shifted away from earlier interest in facilities, practitioner intelligence and time management.[137] Such has been the strength of this integration that the links between chronic disease care, bureaucratised managerialism and good general practice continue to the present day in contemporary discourse and policy. In 2004, for instance, the General Medical Services contract introduced the Quality and Outcomes Framework (QOF) for general practice, a voluntary pay-for-performance scheme to encourage improved organisation, expanded preventive health service delivery, and developed GP-management of common chronic diseases. The QOF is vastly more complex than the earlier 1990s contracts, awarding gradated points for various levels of compliance with selected indicators. The premise of the scheme nonetheless shares much in common with the earlier contracts, and in particular with the emphases on bureaucracy, review, and GP chronic disease management. Recent discussions of the QOF, whilst equivocal - and even critical - about its impact, have reinforced ideas that incentives are effective, and that organised GPs should provide vital preventive health care to local populations.[138]

There is significant scope for further accounts of evolving architectures of care, as well as for more expansive discussions about how models of care and management moved between sites, specialties and conditions.[139] Currently, for example, historians have paid very little attention to the histories of surveillance tools, and whilst the early-

twentieth-century medical record has received significant attention, scholars have generally restricted their interest to this instrument.[140] The histories of recall systems, of clinical computers, of care protocol, and clinical audit and guidelines – and, crucially, their connections to shifting understandings of disease, treatment and labour – are greatly under examined.[141] Such studies are likely to take in significant changes in post-war medicine, politics and society in specific (and interlinked) locations, and in the British case they will require closer attention to the interactions between private companies, public health care architectures, and large-scale research infrastructure than hitherto attempted.[142] This work will undoubtedly prove challenging to historians, and require flexible, interdisciplinary frameworks for analysing disease and formations of medical labour. It will nonetheless likely also prove very valuable, and elucidate some of the defining features of post-war clinical practice.

Select Bibliography

Armstrong, D., 'Chronic illness: a revisionist account', *Sociology of Health and Illness*, 36, 2014, 15-27.

– 'The rise of surveillance medicine', *Sociology of Health and Illness*, 17, 1995, 393-404.

Berg, M., 'Practices of reading and writing: the constitutive role of the patient record in medical work', *Sociology of Health and Illness*, 18, 1996, 499-524.

Berridge, V., *Marketing Health: Smoking and the Discourse of Public Health in Britain, 1945-2000*, Oxford: Oxford University Press, 2007.

Porter, D., *Health Citizenship: Essays in Social Medicine and Biomedical Politics*, Berkeley: University of California Press, 2011.

Greene, J. *Prescribing By Numbers: Drugs and the Definition of Disease*, Baltimore: Johns Hopkins University Press, 2007.

Howell, J.D., *Technology in the Hospital: Transforming Patient Care in the Early Twentieth Century*, Baltimore, Johns Hopkins University Press, 1995.

Stanton, J., 'Intensive Care: Measurement and Audit in an Expansive Growth Area of Medicine', in V. Berridge, (ed.), *Making Health Policy, Networks in Research and Policy after 1945*, Amsterdam: Rodopi, 2005, pp.243-75.

Sturdy, S., and Cooter, R., 'Science, Scientific Management and the Transformation of Medicine in Britain, c.1870-1950', *History of Science*, 36, 1998, 421-66.

Weisz, G., *Chronic Disease in the Twentieth Century: A History*, Baltimore: Johns Hopkins University Press, 2014.

– *Divide and Conquer: A Comparative History of Medical Specialization*, Oxford: Oxford University Press, 2006.

Weisz, G., Cambrosio, A., Keating, P., Knaapen, L., Schlich, T., and Tournay, V.J., 'The Emergence of Clinical Practice Guidelines', *Milbank Quarterly*, 85, 2007, 691-727.

Valier, H., and Bivins, R., 'Organization, Ethnicity and the British National Health Service', in J. Stanton, (ed.), *Innovations in Health and Medicine: Diffusion and Resistance in the Twentieth Century*, London: Routledge, 2002, pp.37-64.

Valier, H., and Timmermann, C., 'Clinical Trials and the Reorganization of Medical Research in post-Second World-War Britain', *Medical History*, 52, 2008, 493-510.

Notes

[1] T. Scott and A. Maynard, 'Will the New GP Contract Lead to Cost Effective Medical Practice?', Discussion Paper 82, University of York, 1991, p.ii, pp.14-34. R. Klein, *The New Politics of the NHS: From creation to reinvention*, 5th edn, Oxford: Radcliffe, 2006, pp.140-86.

[2] P. Selby, 'W(h)ither Diabetes Care?', *Diabetic Medicine*, 10, 1993, 791-2; Department of Health, *The Health of the Nation: A Strategy For Health in England*, Cm. 1986, London: HMSO, 1992.

[3] M. Bufton and V. Berridge, 'Post-War Nutrition Science and Policy Making in Britain c. 1945-1994: The Case of Diet and Heart Disease', in D. Smith and J. Phillips, (eds), *Food, Science, Policy and Regulation in the Twentieth Century: International and Comparative Perspectives*, London: Routledge, 2000, pp.207-22.

[4] M. Denham, 'The Surveys of the Birmingham Chronic Sick Hospitals, 1948-1960s', *Social History of Medicine*, 19, 2006, 279-93.

[5] G. Weisz, *Chronic Disease in the Twentieth Century: A History*, Baltimore: Johns Hopkins University Press, 2014, pp.233-45.

[6] M. Berg, 'Practices of reading and writing: the constitutive role of the patient record in medical work', *Sociology of Health and Illness*, 18, 1996, 499-524.

[7] S. Ezedum and D. Kerr, 'Collaborative Care of Hypertensives, Using a Shared Record', *British Medical Journal*, 2, 1977, 1402-3.

[8] J.D. Howell, *Technology in the Hospital: Transforming Patient Care in the Early Twentieth Century*, Baltimore, Johns Hopkins University Press, 1995, pp.30-60.

[9] V. Berridge, *Marketing Health: Smoking and the Discourse of Public Health in Britain, 1945-2000*, Oxford: Oxford University Press, 2007; Weisz, *Chronic Disease in the Twentieth Century,* pp.176-203. Though note: H. Valier and R. Bivins, 'Organization, Ethnicity and the British National Health Service', in J. Stanton, (ed.), *Innovations in Health and Medicine: Diffusion and Resistance in the Twentieth Century*, London: Routledge, 2002, pp.37-64.

[10] For a thorough review of NHS historiography: M. Gorsky, 'The British National Health Service 1948-2008: A Review of the Historiography', *Social History of Medicine*, 21, 2008, 437-60. On post-war general practice, see: D. Armstrong, Space and Time in British General Practice', *Social Science and Medicine*, 20, 1985, 659-66; I. Loudon, J. Horder and C. Webster, (eds.), *General Practice Under the National Health Service, 1948-1997*, Oxford: Oxford University Press, 1998*;* G. Smith and M. Nicolson, 'Re-expressing the division of British medicine under the NHS: The importance of locality in general practitioners' oral histories', *Social Science and Medicine*, 64, 2007, 938-48. For care models and variations: J. Stanton, 'Intensive Care: Measurement and Audit in an Expansive Growth Area of Medicine', in V. Berridge, (ed.), *Making Health Policy, Networks in Research and Policy after 1945*, Amsterdam: Rodopi, 2005, pp.243-75.

[11] J. Hasler, 'The size and nature of the problem', in J. Hasler and T. Schofield, (eds.), *Continuing care: the management of chronic disease,* 2nd edn, Oxford: Oxford University Press, 1984, 3-15, p.10.

[12] H.P. Himsworth, 'The Syndrome of Diabetes Mellitus and Its Causes', *The Lancet*, 253, 1949, 465-73. Insulin was acknowledged to be the hormone catalyzing carbohydrate use.

[13] W. Oakley, 'The Management of Diabetes Mellitus', *British Medical Journal*, 2, 1949, p.1345; R.B. Tattersall, *Diabetes: The Biography*, Oxford: Oxford University Press, pp.10-30.

[14] British Medical Journal, 'Complications of Diabetes', *British Medical Journal*, 1, 1953, 1438-9.

[15] Oakley, 'Management of Diabetes Mellitus', 1345. For review of theories: J. Lister, *The Clinical Syndrome of Diabetes Mellitus*, London: H.K. Lewis, 1959, pp.4-9.

[16] W.G. Oakley, D.A. Pyke, and K.W. Taylor, *Diabetes and its Management*, 3rd edn, Oxford: Blackwell Scientific Publications, 1978, pp.61-6, pp.76-102. Also: R.D. Lawrence, *The Diabetic Life: Its Control by Diet and Insulin, A Concise Practical Manual*, 15th edn, London: J.A. Churchill, 1955, pp.38-41, 48-54. Classification debates were more intense in research circles in later decades: A.M. Hedgecoe, 'Reinventing diabetes: Classification, division and geneticization of disease', *New Genetics and Society*, 21, 2002, 7-27.

[17] J. Greene, *Prescribing By Numbers: Drugs and the Definition of Disease*, Baltimore: Johns Hopkins University Press, 2007, esp. 83-114.

[18] M. Bliss, *The Discovery of Insulin*, 25th Anniversary Edition, Chicago: University of Chicago, 2007; J. Liebenau, 'The MRC and the pharmaceutical industry: the model of insulin', in J. Austoker and L. Bryder, (eds), *Historical Perspectives on the Roles of the MRC: Essays in the history of the Medical Research Council and its predecessor the Medical Research Committee, 1913-1953*, Oxford: Oxford University Press, 1989, pp.163-80.

[19] 'Scotland: From Our Own Correspondent', *The Lancet*, 140, 1924, 461. On the history of specialist clinics: R Cooter, 'The Politics of Spatial Innovation: Fracture

Clinics in Interwar Britain', in, J. Pickstone (ed.), *Medical innovations in historical perspective*, Basingstoke: Macmillan, 1992, pp.146-64. Specialists here were not certified full-time practitioners so much as researchers and clinical generalists receiving referrals on the basis of a special interest and acknowledged expertise. This model continued into the NHS: G. Weisz, *Divide and Conquer: A Comparative History of Medical Specialization*, Oxford: Oxford University Press, 2006, pp.164-87.

[20] R.D. Lawrence, 'Special Clinics for Diabetics', *British Medical Journal*, 2, 1942, 322.

[21] G. F. Walker, 'Reflections on Diabetes Mellitus: Answers to a Questionary', *The Lancet,* 262, 1953, 1329-32. Even those who doubted control still observed patients for clinical symptoms, weight gain, and ketosis: D.M. Dunlop, 'Are Diabetic Degenerative Complications Preventable?', *British Medical Journal*, 2, 1954, p.383. Many clinicians were agnostic, but continued close control on the principles of physiology and harm reduction: 'Detection of Diabetes', *British Medical Journal*, 1, 1962, p.1537. Later evidence from observational studies was not considered proof but strong enough to be convincing: M.T. Wojciechowski, 'Systematic care of diabetic patients in a general practice', *Journal of the Royal College of General Practitioners*, 32, 1982, p.531.

[22] C.J.C. Earl, 'The Treatment of Diabetics as Hospital Out-Patients", *British Medical Journal*, 1, 1927, 831-3; Walker, 'Reflections on Diabetes Mellitus', 1329-32.

[23] Though compare practice and beliefs in: I.H. Redhead and J.J.A. Reid, 'Diabetic Clinics and the General Practitioner', *The Lancet*, 281, 1963, 159-60.

[24] D.G. French, 'Advances in General Practice', *The Practitioner*, 183, 1959, p.514; The National Archives [TNA], BD 18/793, F.L. Dyson to Dr. A. Trevor Jones, 'Regional Planning of Diabetic Services', 12th August 1953, 1.

[25] The Diabetic Association, 'London Diabetic Clinics, Provincial Diabetic Clinics', *The Diabetic Journal*, 3, 1940, 32-4; TNA, BD 18/793, 'Diabetic Clinics', 1955.

[26] 'Regional Diabetic Services', *British Medical Journal*, 2, 1953, 160.

[27] J. Walker, *Chronicle of a Diabetic Service*, London: British Diabetic Association, 1988, Appendix B, p.91.

[28] J. Malins, *Clinical Diabetes Mellitus*, London: Eyre and Spottiswood, 1968, p.456.

[29] See shifting mortality patterns in the Birmingham clinic: ibid, 466-8. However, discussions also reflexively highlighted problems with data, especially when considering national patterns: J.M. Malins, 'Food and Death-Rates from Diabetes', *The Lancet*, 304, 1974, 1201.

[30] Walker, *Chronicle of a Diabetic Service,* Appendix B, p.91.

[31] H.P. Himsworth, 'Diet in the Aetiology of Human Diabetes', *Proceedings of the Royal Society of Medicine*, 63, 1949, pp.323-6; J.J.A. Reid, 'A New Public Health - The Problems and the Challenge', *Public Health,* 79, 1965, pp.183-4; T.L Cleave and G.D. Campbell, *Diabetes, Coronary Thrombosis and the Saccharine Disease,* Bristol: John Wright & Sons, 1966*;* Malins, *Clinical Diabetes Mellitus*, pp.456-457.

[32] D. Porter, *Health Citizenship: Essays in Social Medicine and Biomedical Politics*, Berkeley: University of California Press, 2011, pp.154-181; L. Berlivet, "Association or Causation?' The Debate on the Scientific Status of Risk Factor Epidemiology, 1947-c.1965', in V. Berridge, (ed.), *Making Health Policy*, pp.39-74; G.M. Oppenheimer, 'Profiling Risk: The Emergence of Coronary Heart Disease Epidemiology in the United States (1947-70)', *International Journal of Epidemiology*, 35, 2006, 720-30.

[33] Tattersall, *Diabetes*, pp.89-90.

[34] J.A. Hunt, C.H, Gray, and D.E. Thorogood, 'Enzyme Tests for the Detection of Glucose', *British Medical Journal*, 2, 1956, 586-8.

[35] C.H. Gray, and H.R. Millar, 'Tests for Glycosuria: A Comparison of Benedict's Test, Clinitest and Glucotest', *British Medical Journal*, 1, 1953, p.1363.

[36] Working Party of the College of General Practitioners. 'A Diabetes Survey', *British Medical Journal*, 1, 1962, p.1497. For colonial research connections and international interests: J.A. Tulloch, *Diabetes Mellitus in the Tropics*, Edinburgh: E&S Livingstone, 1962.

[37] V. Quirke and J-P. Gaudillière, 'The Era of Biomedicine: Science, Medicine and Public Health in Britain and France after the Second World War', *Medical History*, 52, 2008, pp.441-444. The presence of commercial funding for research in Britain has been vastly underplayed, but for the US: Greene, *Prescribing By Numbers*. For the emergence of `the survey' as a tool of community surveillance in Britain: D. Armstrong, *Political anatomy of the body: Medical knowledge in Britain in the twentieth century*, Cambridge: Cambridge University Press, 1983.

[38] C. Timmermann, 'A matter of degree: The normalisation of hypertension, c.1940-2000', in W. Ernst (ed.), *Histories of the Normal and the Abnormal: Social and Cultural Histories of Norms and Normativity*, London: Routledge, 2006, pp.252-5.

[39] Working Party, `A Diabetes Survey', 1497-1503.

[40] R.D. Lawrence, 'Regional Centres for the Treatment of Diabetes', *The Lancet*, 257, 1951, p.1318; 'Detection of Diabetes', *British Medical Journal*, 2, 1959, 555-6; '350,000 May Have Diabetes', *The Times*, London, 17 July 1962, p.6, http://find.galegroup.com/ttda/basicSearch.do;jsessionid=7C31A3032D21FA2463799CE089BDCB10, accessed 11 December 2014.

[41] For instance: 'BMA Annual Meeting: Panel Discussion on Diabetes', *British Medical Journal*, 2, 1964, 302-3; J.W. Laurie, 'Detection of Diabetes', *The Lancet*, 282, 1963, 390; H. Cairns, 'Detection of Diabetes', *The Lancet*, 282, 1963, 412; H. Creditor, 'Detection of Diabetes', *The Lancet*, 282, 1963, 580; W.L. Ashton, 'Detection of Diabetes', *The Lancet*, 282, 1963, 684; A.V. Neale, 'Detection of Diabetes', *The Lancet*, 282, 1963, 786-787; W. Oakley, 'Detection of Diabetes', *The Lancet*, 282, 1963, 787; J.W. Laurie, 'Detection of Diabetes', *The Lancet*, 282, 1963, 838.

[42] T. Cutler, 'A double irony? The politics of National Health Service expenditure in the 1950s', in M. Gorsky and S. Sheard, (eds), *Financing Medicine: The British experience since 1750*, London: Routledge, 2006, 200-20.

[43] T. Cutler, 'Dangerous Yardstick? Early Cost Estimates and the Politics of Financial Management in the First Decade of the National Health Service', *Medical History*, 47, 2003, 217-38.

[44] C. Webster, *The Health Services Since the War, Volume I: Problems of Health Care. The National Health Service Before 1957*, London: HMSO, 1988, pp.133-226. The topic of NHS spending is, of course, contentious. Deflated by a general price index, NHS spending did double between 1957 and 1979. However, adjusting in light of an NHS-specific price index, Webster has suggested that this growth generally fell below the 2.5 per cent annual growth that ministers suggested was required to provide a constant level of service. C. Webster, *The Health Services Since The War, Volume II: Government and Health Care, The British National Health Service 1958-1979*, London: HMSO, 1996, pp.760-761, Appendices 3.3.4-3.5.

[45] Ministry of Health, *First Report of the Joint Working Party on the Organisation of Medical Work in Hospitals*, (London: HMSO, 1967). G. Forsyth and R. Logan,

Gateway or Dividing Line? A study of hospital outpatients in the 1960s, Oxford: Oxford University Press for the Nuffield Provincial Hospitals Trust, 1968.

[46] 'To come again, 3 months', *The Lancet*, 307, 1976, 1168-9.

[47] P.A. Thorn and R.G. Russell, 'Diabetic Clinics Today and Tomorrow: Mini-Clinics in General Practice', *British Medical Journal*, 2, 1973, pp.535-6.

[48] R.D. Hill, 'Community care service for diabetics in the Poole area', *British Medical Journal*, 1, 1976, p.1137.

[49] Thorn and Russell, 'Diabetic Clinics Today and Tomorrow', 536.

[50] R.D. Lawrence, 'Types of Human Diabetes', *British Medical Journal*, 1, 1951, 374.

[51] R.D. Lawrence, *The Diabetic Life: Its Control by Diet and Insulin, A Concise Practical Manual For Practitioners and Patients*, 6th edn, London: J.A. Churchill, 1931, pp.14, pp.18-19.

[52] 'Detection of Diabetes', 1537.

[53] In certain cancers, doctors had begun to debate deviations of normality earlier in the century. Differences in disease politics, materiality of lesions, and diagnostic and therapeutic modalities provided a different trajectory across and between cases: Ilana Löwy, *Preventive Strikes: Women, Precancer, and Prophylactic Surgery*, Baltimore: Johns Hopkins University Press, 2010.

[54] Malins, *Clinical Diabetes*, pp.68-76.

[55] On diabetes and concepts of pathology and normality in quantitative terms: Georges Canguillhem [trans. Caroline Fawcett et.al.], *The Normal and the Pathological*, New York: Zone Books, 1989.

[56] 'British Diabetic Association', *British Medical Journal*, 2, 1962, p.1252.

[57] R.J. Jarrett, *Diabetes Mellitus*, London: Croom Helm, pp.1-3.

[58] Royal College of General Practitioners Archives, John Fry, 'The Management of Maturity Onset Diabetes in a General Practice (1951-1971)', MSS, B Fry C6-1 (i), 8-9. Undated.

[59] Hill, 'Community care service', p.1139.

[60] Adrian P. Kratky, 'An audit of the care of diabetics in one general practice', *Journal of the Royal College of General Practitioners*, 27, 1977, 536-42.

[61] Though they often co-existed with extended GP care: Valier and Bivins, 'Organization, Ethnicity and the British National Health Service', pp.37-64.

[62] C.E. Upton, 'Diabetic Community Care', *The Practitioner*, 215, 1975, 83-5.

[63] Oral History Interview with Mary Mackinnon performed by the University of Oxford, *Diabetes Stories*, 23/04/2007, http://diabetes-stories.com/interview.asp?UID=62, accessed 8 February 2015.

[64] M. Gorsky, 'To regulate and confirm inequality? A regional history of geriatric hospitals under the English National Health Service, c.1948-1975', *Ageing & Society*, 33, 2013, 598-625.

[65] J.M. Malins and J.M. Stuart, 'Diabetic Clinic in a General Practice', *British Medical Journal*, 4, 1971, 161; D.R.R. Williams, C. Munroe, C.J. Hospedales and R.H. Greenwood, 'A Three-Year Evaluation of the Quality of Diabetes Care in the Community Care Scheme', *Diabetic Medicine*, 7, 1990, pp.74.

[66] Wojciechowski, 'Systematic care of diabetic patients', 531-3.

[67] I. Benett, 'Diabetes mini-clinic', *Journal of the Royal College of General Practitioners*, 38, 1988, 76-7.

[68] Hill, 'Community care service', 1137-9.

[69] J.L. Day, H. Humphries and H. Alban-Davies, 'Problems of Comprehensive Shared Diabetic Care', *British Medical Journal*, 294, 1987, 1590-2.

[70] B. Hurwitz and J. Yudkin, 'Diabetes Care: Whose Responsibility?', *British Medical Journal*, 289, 1984, 1000-1; A.K. Baksi, J. Brand, M. Nicholas, A. Tavabie, B.J. Cartwright, M.R. Waterfield, 'Non-Consultant Peripheral Clinics: A New Approach to Diabetic Care', *Health Trends,* 16, 1984, 38-40.

[71] P.R.W. Tasker, 'General Practice Diabetic Care', *Journal of the Royal College of General Practitioners* 1983, 33, 828.

[72] D. Chesover, P.T. Miles, and S. Hilton, 'Survey and Audit of Diabetes Care in General Practice in South London', *British Journal of General Practice*, 41, 1991, 282-5.

[73] J.M. Wilks, 'Diabetes - A Disease for General Practice', *Journal of the Royal College of General Practitioners*, 23, 1973, pp.51-2; Wojciechowski, 'Systematic Care of Diabetic Patients', p.532.

[74] R.D. Hill, *Diabetes Health Care: A Guide to the Provision of Health Care Services*, London: Chapman and Hall, 1987, pp.95-7.

[75] B.R.G. Fletcher, 'Looking after diabetics in general practice: A trainee project', *Journal of the Royal College of General Practice*, 27, 1977, p.87.

[76] M.Hall, 'Diabetic Care in General Practice: The Exeter Project', in Royal College of General Practitioners (ed.), *Diabetes Information Folder*, London: Royal College of General Practitioners, 1988, Appendix 8, p.5.

[77] R.L. Gibbins and J. Saunders, 'Develop diabetic care in general practice', *British Medical Journal*, 297, 1988, p.188.

[78] Williams et.al., 'A Three-Year Evaluation', pp.76-8.

[79] Scottish Home and Health Department, *Report of the Working Group on the Management of Diabetes*, Edinburgh: HMSO, pp.77-78.

[80] F.K.E Tunbridge, J.P. Millar, P.J. Schofield, J.A. Spencer, G. Young, and P.D. Home, 'Diabetes care in general practice: an approach to audit of process and outcome', *British Journal of General Practice*, 43, 1993, 291-5.

[81] Benett, 'Diabetes mini-clinic', 76-78.

[82] Oral History Interview with Mary Mackinnon performed by the University of Oxford.

[83] B. Singh, M. Holland and P. Thorn, 'Metabolic Control of Diabetes in General Practice Clinics: Comparison with a Hospital Clinic', *British Medical Journal*, 289, 1984, 726-8.

[84] D.G. Garvie, 'The Diabetic, The Hospital, and Primary Care', *Journal of the Royal College of General Practitioners*, 30, 1980, 440.

[85] Malins and Stuart, 'Diabetic Clinic in a General Practice', 161.

[86] TNA, FD 7/2303, P.R.W. Tasker to D.A. Pyke, 'RE: The Provision of Medical Care for Diabetic Patients in the UK', 1985, 1-2.

[87] J.G. Mellor, A. Semanta, R.L. Blandford, A.C. Burden, 'Questionnaire Survey of Diabetic Care in General Practice in Leicestershire', *Health Trends*, 17, 1985, 61-3.

[88] TNA, Tasker to Pyke', p.2.

[89] C. Dornan, G. Fowler, J.I. Mann, A. Markus, and M. Thorogood, 'A Community Study of Diabetes in Oxfordshire', *Journal of the Royal College of General Practitioners*, 33, 1983, 151-5.

[90] Williams et.al.,, 'A Three-Year Evaluation', 74-79.

[91] TNA, Tasker to Pyke, p.2.

[92] Ibid.

[93] Day et.al., 'Problems of Comprehensive Shared Care', 1590-2.

[94] Chesover et.al., 'Survey and Audit' 282-5.

[95] A. Foulkes, A.L. Kinmonth, S. Frost and D. MacDonald, 'Organised personal care - an effective choice for managing diabetes in general practice', *Journal of the Royal College of General Practitioners*, 39, 1989, 444-7.

[96] TNA, Tasker to Pyke, p.2.

[97] Hill, 'Community care service', 1137-9.

[98] T.J. Kemple and S.R. Hayter, 'Audit of Diabetes in General Practice', *British Medical Journal*, 302, 1991, 451-3.

[99] Hall, 'Diabetic Care in General Practice', in Royal College of General Practitioners, *Diabetes Clinical Information Folder*, Appendix 8.

[100] At least on a trial basis: G.F. Morgan, D.A. Cadman, P.H. Edwards, T.C. O'Dowd, and R.H. Davis, 'Diabetes Care: Whose Responsibility?', *British Medical Journal*, 289, 1984, 1309-10.

[101] Wojciechowski, 'Systematic Care of Diabetic Patients', 531-533.

[102] R.L. Gibbins and J. Saunders, 'Characteristics and Pattern of Care of a Diabetic Population in Mid-Wales', *Journal of the Royal College of General Practitioners,* 39, 1989, 206-8.

[103] Wilks, 'Diabetes - A Disease for General Practice', p.46.

[104] Thorn and Russell, 'Diabetic Clinics Today and Tomorrow', p.536.

[105] Singh et.al., 'Metabolic Control of Diabetes in General Practice Clinics' , p.728.

[106] C.H. Stewart-Hess, 'The Management of Maturity Onset Diabetes in General Practice', *Journal of the Royal College of General Practitioners*, 23, 1973, p.859.

[107] Wilks, 'Diabetes - A Disease for General Practice', p.46.

[108] Quote from an interview published in Ann Cartwright, *Patients and Their Doctors,* London: Routledge and Kegan Paul, 1967, p.58; see also pp.39-62 for an overview of doctors' frustrations.

[109] Armstrong, *Political anatomy of the body*, pp.79-82.

[110] Thorn and Russell, 'Diabetic Clinics Today and Tomorrow', p.534.

[111] Kratky, 'An audit of the care of diabetics in one general practice', p.536.

[112] R.E. Tunbridge, 'Sociomedical Aspects of Diabetes Mellitus', *The Lancet*, 262, 1953, 893-9.

[113] M. Marinker, "What is wrong' and 'How we know it': Changing Concepts of Illness in General Practice', Loudon, Horder and Webster, *General Practice Under the National Health Service,* pp.71-8. Though cf: M. Perry, 'Academic General Practice in Manchester under the Early National Health Service: A Failed Experiment in Social Medicine', *Social History of Medicine,* 13, 2000, 111-29.

[114] Wojciechowski, 'Systematic Care of Diabetic Patients', p.533.

[115] Oral History Interview with Richard Gee performed by the University of Oxford, *Diabetes Stories*, 22/04/2008, http://diabetes-stories.com/interview.asp?UID=98, accessed 8 February 2015.

[116] J. Lewis, *What Price Community Medicine? The Philosophy, Practice and Politics of Public Health since 1919*, Brighton: Wheatsheaf, 1986, pp.18-26; Armstrong, *Political anatomy of the body*, pp.48-53, pp.73-78, pp.93-100.

[117] D.L. Crombie, 'Testing in Family Practice for Diabetes', *Journal of the Royal College of General Practitioners*, 7, 1964, 379-85.

[118] Reid, 'A New Public Health', 183-195.

[119] D.E. Cullington, 'The Orientation of the General Practitioner', *Public Health*, 79, 1965, 215-8.

[120] Lewis, *What Price Community Medicine?*, pp.100-59.

[121] Royal College of General Practitioners, *Report From General Practice 19. Prevention of Arterial Disease in General Practice: A Report of a Sub-Committee of the Royal College of General Practitioners' Working Party on Prevention*, London: Royal College of General Practitioners, 1981.

[122] Dornan et.al., 'A Community Study of Diabetes in Oxfordshire', 151-5.

[123] Royal College of General Practitioners, *Prevention of Arterial Disease in General Practice*, p.7.

[124] J.N. Morris, 'The Prevention of Disease in Middle Age', *Public Health*, 77, 1963, p.238.

[125] R.F.L. Logan, 'Control of Chronic Disease in General Practice and Industry', *Journal of the College of General Practitioners*, 11, Supplement 1, 1966, p.95. On risk and surveillance: D. Armstrong, 'The rise of surveillance medicine', *Sociology of Health and Illness*, 17, 1995, 393-404.

[126] Stewart-Hess, 'The Management of Maturity Onset Diabetes in General Practice', pp.843-4.

[127] For instance: H. Al Sayegh and R.J. Jarrett, 'Oral Glucose-Tolerance Test and the Diagnosis of Diabetes: Results of a Prospective Study Based on the Whitehall Survey', *The Lancet*, 314, 1979, 431-3.

[128] Or, in the words of one doyen of the field, 'as sampling technique as well as subject' – cited in C. Rosenberg, *The Cholera Years: The United States in 1832, 1849, and 1866*, Chicago: University of Chicago Press, 1962, p.4.

[129] S. Sturdy and R. Cooter, 'Science, Scientific Management and the Transformation of Medicine in Britain, c.1870-1950', *History of Science*, 36, 1998, 421-66.

[130] Weisz, *Divide and Conquer*, pp.xix-xxi, pp.xxvii-xxviii.

[131] Helen Valier and Carsten Timmermann, 'Clinical Trials and the Reorganization of Medical Research in post-Second World-War Britain', *Medical History*, 2008, Vol.52, 493-510; G. Weisz, A. Cambrosio, P. Keating, L. Knaapen, T. Schlich and V.J. Tournay, 'The Emergence of Clinical Practice Guidelines', *Milbank Quarterly*, 85, 2007, 691-727.

[132] This generalised view of the principles of bureaucratisation is adapted from a Weberian model, though abstracted from Weber's universalist theories of historical development. By using the term bureaucratisation, I am here referencing an ongoing process - or, rather, a set of processes - and acknowledging that British medicine is clearly not, nor ever has been, a model of bureaucracy. This is in-line with Weber's own work, in which his methodology often centred on exploring phenomena and what we might term 'big pictures' by drawing out 'ideal types', rather than producing complex case studies rich in minute details. For Weber's translated works on bureaucracy: M. Weber [edited by G. Roth and C. Wittich (eds), translated by E. Fischoff et.al], *Economy and Society: An Outline of Interpretive Sociology,* Vols. 1 &2, (Berkeley: California University Press, 1978), pp.217-26, pp.956-1005, esp. pp.956-8, pp.973-5.

[133] Hurwitz and Yudkin, 'Diabetes Care', 1000-1; Day et.al., 'Problems of Comprehensive Shared Care', 1590-2.

[134] Colin Waine, *Why Not Care for Your Diabetic Patients*, 2nd Edition, London: Royal College of General Practitioners, 1988, p.2.

[135] Royal College of General Practitioners, *Quality in General Practice: Policy Statement 2*, London: Royal College of General Practitioners, 1985, p.1.

[136] I. Kirkpatrick, and M. Martinez Lucio (eds), *The Politics of Quality in the Public Sector: The Management of Change*, London: Routledge, 1995.

[137] Of course, even during the 1950s, emphases on quality varied between interlocutors in the issue and organisation featured in some discussions. Nonetheless, the links with chronic disease and management were significant novelties of later decades. Cf above with: Stephen Taylor, *Good General Practice: A Report on a Survey*, London: Oxford University Press, 1954.

[138] A. Dixon, A. Khachatryan, A. Wallace, S. Peckham, T. Boyce, S. Gillam, *Impact of Quality and Outcomes Framework on health inequalities*, King's Fund: London, 2011.

[139] Work in the history of the laboratory, scientific medicine and in Science and Technology Studies made important strides here, but this has not been followed up on. For a review of work in STS on local knowledge and making practices universal: J. Golinski, *Making Natural Knowledge: Constructivism and the History of Science*, Chicago: University of Chicago Press, 2005, esp. pp.162-85. For histories of laboratories and scientific medicine: A. Cunningham and P. Williams (eds), *The laboratory revolution in medicine*, Cambridge: Cambridge University Press, 1992. S. Sturdy, 'The Political Economy of Scientific Medicine: Science, Education and the Transformation of Medical Practice in Sheffield, 1890-1922', *Medical History*, 36, 1992, 125-59; Andrew Hull, 'Hector's House: Sir Hector Hetherington and the Academicization of Glasgow Hospital Medicine before the NHS', *Medical History*, 45, 2001, 207-42.

[140] John Harley Warner, *The Therapeutic Perspective: Medical Practice, Knowledge and Identity in America, 1820-1885*, Cambridge, Massachusetts: Harvard University Press, 1986, pp.83-162; B.L. Craig, 'The Role of Records and Of Record-Keeping In the Development of the Modern Hospital in London, England and Ontario, Canada', *Bulletin of the History of Medicine*, 65, 1991, pp.383-91; Howell, *Technology and the Hospital*, pp.42-56; M. Berg and P. Harterink, 'Embodying the Patient: Records and Bodies in Early 20th-Century US Medical Practice', *Body and Society*, 10, 2004, 13-41.

[141] Some work has begun here, but there remains much to scope out in terms of transfer between sites, and in terms of different contexts: Weisz et.al., 'The Emergence of Clinical Practice Guidelines', 691-727; Patricia Day, Rudolf Klein and Frances Miller, *A Comparative US-UK Study of Guidelines*, London: Nuffield Trust, 1998; S. Mars, 'Peer Pressure and Imposed Consensus: The Making of the 1984 *Guidelines of Good Clinical Practice in the Treatment of Drug Misuse*', in Berridge, *Making Health Policy*, pp.149-84. On audit, see Stanton, 'Intensive Care', 243-75.

[142] This is far more common in histories US medicine, even where British companies and international connections are involved: Greene, *Prescribing by Numbers;* V. Quirke, 'Targetting the American Market for Medicines, ca. 1950s-1970s: ICI and Rhône-Poulenc Compared', *Bulletin for the History of Medicine*, 88, 2014, 654-96.