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Incorporating remote visits into an out-patient clinic

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Abstract

Most telemedicine studies are concerned with either the technological or diagnostic comparisons, rather than assessing the impact on clinic management. This has attributed to the retrospective nature of the studies, with lack of data being the main cause for not using simulation for prospective analysis. This paper demonstrates the use of simulation to assess the impact of prospective systems by utilising data generated from clinical trials. The example used here is the introduction of remote consultations into an outpatient's clinic. The paper addresses the issues of using secondary data, in terms of the differences between the trial, the model, and future reality. The result of running the simulation model show that exchanging the mode of service delivery does not improve patient wait times as expected, and that a protocol change in association with the introduction of remote visits is necessary to provide a substantial reduction in patient wait times.

Keywords

Hospitals, Simulation, Remote consultations, Teledermatology

Introduction

Most telemedicine studies are concerned with either the technological aspects or comparing diagnostic outcomes with face-to face visits (Aoki *et al*, 2003). Telemedicine techniques have been shown to work, but few studies have looked at the impact of incorporating the telemedicine service into current process of patient care, or indeed re-engineering the process to make the best advantage of the technology. Dermatology is a clinical speciality that particularly lends itself to telemedicine methods and research has been conducted on both video-conferencing (real-time) and store-and-forward tele-dermatology (Aoki *et al*, 2003). Most studies that have been viewed from the perspective of agreement between the tele-dermatology diagnosis and the face-to-face diagnosis, and have proved favourable (see Eedy and Wootton, 2001 for a review). Store-and-forward techniques appear to have a higher concordance than video-conferencing, but this may be due to technical aspects of bandwidth required for video-conferencing and therefore may change in time. Other studies have looked at the more social aspect of telecare (see, for instance, May *et al*, 2005). Few studies appear to evaluate the impact that telecare would have on the management of the clinic itself. Most of these reviews look at "retrospective" evaluation of telemedicine – mainly by comparing old and new systems using a number of criteria, such as diagnostic accuracy, efficiency and engagement, and patient satisfaction (Lewin Group Inc, 2000, Roine *et al*, 2001, Aoki *et al*, 2003). However, these studies have tended to focus on clinical contexts, specialities and measures, whilst basing their evaluation on existing systems for obvious reasons (Coughlan *et al*, 2006).

There have numerous publications on the use of simulation to evaluate telemedicine projects. It has been proven to support prospective evaluation for planning and design and policy evaluation of future systems (Tunnicliffe Wilson, 1981, Jun *et al*, 1999, Eldabi *et al*, 2000, Eldabi *et al*, 2006). However, not much was published in relation to the use of simulation in retrospective analysis, except for few reports such as that by the Lewin Group (Lewin Group Inc, 2000) The use of simulation – with a particular focus on process simulation – in healthcare context is a well explored and documented issue. It has been used in a variety of ways from dealing with medical issues, to those of a more administrative or operational context (Dangerfield and Roberts, 1996, Lagergren, 1998, Dangerfield and Roberts, 1999, Savin, 2006). For example, it covered patient oriented systems (disease based) and wider issues of policy making and strategy building (vaccination programmes). Fone *et al.* (2003) and Jun *et al* (1999) provide detailed reviews of the area and the different uses. According to Jun *et al* (1999), there are three major areas in which simulation can benefit patient flow: Designing new systems; deeper insights about existing systems; and testing and staff training environment. Sanchez *et al* (2000) and Standridge (1999) also report on the use of simulation to support policy decisions.

This paper attempts to assess the feasibility of using simulation for prospective analysis and identify innovative ways for coping with some of the challenges that comes with that. The most important challenge being that the system does not exist so no real data would be available to conduct comparisons not even for building the models. The paper demonstrates how data arising from clinical trials could be used to extrapolate behaviours of nonexistent systems. The context here is based on a dermatology department within a major American hospital where a trial is conducted to assess of remote consultations and the viability of incorporating them into some of the existing processes. The following section gives a detailed description of the trial, followed by a quick analysis of the differences between the trial, the model, and reality before various aspects of how the model was designed to capture, as accurately as possible, the intricacies of the real situation. The simulation model allows us to experiment with a number of scenarios to determine how best the introduction of remote visits could be incorporated into current practice. Discrete event simulation modelling is an appropriate tool for this kind of experimentation as we wish to capture what happens over time, to both individual patients and queues, in order to gain a greater understanding of the system under consideration. Although the paper looks at a specific example of remote consultations in a dermatology clinic the model is of a generic nature so could be applied to any speciality that uses a similar appointment booking system.

Remote consultation trial

Massachusetts General Hospital (MGH) is large hospital in New England with 4 campuses that handles, amongst many other aspects, nearly 1.5 million outpatients annually (MGH Hospital). MGH performed a trial for patients with a mild acne condition to assess the viability of remote consultations. During the trial each patient has an initial 15-minute face-to-face visit to determine their eligibility for the trial. 430 patients were recruited and randomly selected to continue with face-to-face consultations or assigned to the remote consultation group. For the purposes of the trial each patient had 5 more visits scheduled five weeks apart. The patients randomised to the remote consultation group were given the relevant equipment (digital cameras, computers, software, and internet access) if they did not already own them, and trained in the use of the website. 48 hours prior to their scheduled visit an automated e-mail would be sent reminding the patient that their photos were due to be sent. The patient would then take photos of their acne and upload them to the

secure website on their home computer. The photos are checked by support staff at the hospital to ensure they are of sufficient quality for the dermatologist to make an assessment – this reduces the time wasted by the dermatologist by looking at inadequate photos, ensuring his time is as productive as possible. If the photos were of insufficient quality the support staff would e-mail the patient and ask that they retake the photos. The dermatologists then reviewed the photos and entered their assessment and advice on the secure website, including when the patient should repeat this process. An email was then sent to the patient informing them that the consultation had taken place and that their advice was accessible through the website. The patient could then review the advice, and ask any questions about it to the dermatologist through the website. The use of the website enables tracking of when the patient opens the message with the advice. Advice is also sent to the support staff to update the patient's medical record with details of the consultation. The trial was designed to test whether patients liked the system and data was recorded to determine how much time patients and dermatologist spent using the system.

Take in Fig 1

Differences between trial, model and reality

The trial, by its very nature, has to be controlled if valid comparisons are to be made between the two groups of patients. For this reason the trial cannot accurately reflect what would happen if the process were to be applied in reality. This section looks at some of the aspects of the trial, the model, and reality to see how they differ, and the implications of those differences.

a) dermatologist time - for the purposes of the trial the dermatologists completed the remote consultations in their own time, as there were few patients and the trial lasted a relatively short period of time. However, if the remote consultation system was to be adopted and expanded to more patients the dermatologist could not be expected to conduct the consultations in their own time, and therefore some time each week would be needed to be dedicated to remote consultations. The model allots time at the beginning of the clinic hours for the dermatologists to deal with the remote consultations, and these are *only* dealt with at this time of day. In reality, the dermatologist would be able to utilise any other 'down' periods to deal with these patients e.g. if a patients fails to attend an appointment. If the dermatologist uses this time to deal with remote consultations it may improve the output statistic that records the percentage of patients that receive their response within three days

b) selection for remote consultations – for the trial the patients are assessed for the appropriateness of their condition to be included in the trial, then they are asked whether they wish to participate, and if so are randomised to either the remote consultation group or the control (face-to-face) group, so that valid comparisons can be made between the two groups. In reality, if the remote consultation system is implemented, providing a patient's condition is deemed appropriate for the remote consultation method, and the patient wishes to participate then they are automatically included. The model does not include patient attributes that make them more, or less, likely to participate in remote consultations (e.g. familiarity with technology, access to a computer, distance from hospital), so patients are simply randomised based on the attribute that indicates the severity of their condition. This does not impact the results as the overall percentage of patients receiving remote consultations remains at the stated level.

c) Number of visits made and the frequency with which patients attend clinic – for the purposes of the trial the patients (both remote consultations and face-to-face visits) have five visits scheduled five weeks apart. This differs from reality where the frequencies with which patients return, and the number of visits they make will be dependent on their clinical condition, and their clinical response to treatment. Again the model does not include measures of clinical response, instead the number of visits, and the intervals between visits are pre-determined as a function of the severity of the condition. The accuracy of the output from the model will depend on the validity of the function modelling repeat visits (see below). However, the initial model run, and the subsequent scenarios all use the same function, so providing the initial model gives fairly reasonable outputs in comparison with reality, the subsequent scenarios should also provide a good indication of what would happen if each of these scenarios was applied.

This section illustrated the differences between the trial, the model and reality and the implications of those differences. The following section provides more detail on how certain aspects of the model were designed so they reflected reality as closely as possible.

The model

This section provides a detailed description of certain aspects of the model. The model was built using Simul8 v9.0 software. There are three main aspects of the model; patients, diary and dermatologists. The model has been designed to be fairly generic, so that it could be applied to any clinic with a similar diary system thinking of introducing remote consultations. This means that when the model is run, certain input parameters are required, including the number of dermatologists and their outpatient clinic hours, the double booking protocol, the percentage of patients that will utilise the remote consultations, and the number of appointments removed from the diary to allow the dermatologist time to deal with these patients. The outputs of the model record aspects such as the wait times for face-to-face appointments, the number of cases seen per week, the percentage of remote consultation patients that get their response within 3 days, and the number of appointments double booked per week.

Data for the model was, where possible, generated from the trial data, or from historical data from the clinic. The number of patients attending the clinic for their first consultation with the dermatologist, for instance, was obtained from historical records over the previous year. The amount of time the dermatologist spent on the remote consultations was generated from the times recorded during the trial of the dermatologists' usage of the system. Other information, such as the length of time between, and the number of, follow-ups was not readily available through the hospital data, so this data was constructed based on discussions with staff at MGH, and the resulting function, and its impact on the model later verified by these staff.

Patients - Arrivals

Patient arrivals are proportional to the number of doctors that are available during the run. In order to reduce warm up effects, for each doctor a number of patients are introduced into the system as 'established' patients, who have already completed a number of visits to their consultant and have their next appointment already booked in the diary. New arrivals were based on a probability distribution that allowed the number of patients that a particular consultant had to remain fairly constant. This information was provided by MGH but did not actually arise from the trial data. On arrival in the system all patients are assigned a number of attributes.

These detail which doctor they will see; whether they have a severe condition – in which case they automatically are illegible for remote consultations – or a mild form of the condition in which case they *may* be eligible for remote consultations; and a unique ID number. Based on the severity of their condition patients are allocated the number of visits that they will make. In the case of an established patient a random number of those visits are denoted as having already taken place, so they will only attend their remaining visits.

Patients - Follow-up appointments

The calculation for the date for the follow up visit is based on the severity of their condition and the number of visits that they have already made. It is assumed that as time progresses and treatment is applied that the patient's condition will improve meaning that less frequent visits are required. Though in reality this would be based entirely on clinical opinion for the simulation model a distribution was developed that reflected a change in frequency of follow-ups as time progressed. As this information was not available the number of weeks before the follow-up appointment was simply based on a mathematical function derived from the number of appointments the patient was allotted on arrival in the system, and the number that they have already attended. Two instances of the effect of this function, one on a severe case and the other on a milder case, can be seen in Figure 2.

Take in Fig 2

From the graph it can be seen that the severe condition patient has more frequent visits at the outset than the milder case patient, and more visits in total e.g. a severe case patient that has already completed 5 visits may be asked to return in 8 weeks, whereas a milder case patient having attended 5 times may be asked to return in 26 weeks. Once the follow-up appointment interval is established, if the patient is a face-to-face consultation patient then he tries to book an appointment in the diary for that time. If however the patient is following the remote consultation method then they simply have to submit their photos at the allotted time, no diary appointment being necessary.

Diary – set up

When the model is started a pop-up screen asks the user how many doctors they want to be included in this run, and the outpatient clinic hours for each of the doctors. A diary is generated based on how many doctors are available, the outpatient clinic hours of each of the doctors, and the number of weeks that a patient could book ahead (in this case 52).

Each entry in the diary can be in one of four states

0 – appointment available for booking
X – doctor does not use these hours for clinic sessions so appointment slot not available for booking
-1 – appointment available as for double-booking i.e. shared appointment between 2 mild case patients
>=1 – appointment booked for patient with that ID number

On set up, for each doctor either an 'X' or a '0' is placed in each of the appointment slots within the spreadsheet, indicating whether this is their clinic hours or not. Each 15-minute appointment consists of two

slots in the diary to allow for double booking of appointments. This data is stored as a two-dimensional array and presented as a spreadsheet by the software as illustrated in figure 4

Diary – booking appointments

One of the challenges in developing the diary was to create the logic where under certain circumstances appointments can be double booked for eligible patients, but these patients must not be penalised by not being given 15-minute appointments when they are available. In order to overcome this problem a 'double-booking protocol' was implemented, effectively a time after which patients could double book appointments In order to allow double booked appointments in the diary each appointment slot in the spreadsheet consists of two cells. Double booked appointments are only allowed for mild condition patients, and only then if they are unable to book an appointment before the time designated by the double booking protocol. For example, if the double booking protocol was set at 1 week and the patient advised to return in four weeks but was unable to get an 15-minute appointment until after the fifth week (i.e. 4 weeks + 1 week), then assuming they were eligible for a double booked appointment they would be offered one as near to the follow-up date (4 weeks) as possible. The logic is illustrated in the flowchart below.

Take in Fig 3

The double booking protocol impacts heavily on the diary. When a patient is told by the dermatologist to return in x number of weeks the diary is searched for an available appointment at that time. If the patient has a severe condition then they require a full 15-minute appointment slot. The logic starts looking at the diary from the time they are asked to return, and looks through to find the next available 15-minute slot, which is then booked by placing the patient's ID number in both the slots. If however the patient has a milder condition and therefore does not necessarily require a 15-minute slot the logic again starts looking for the next available 15-minute slot from the time they are asked to return. If there is a slot available within the time indicated by the double booking protocol then the appointment is booked by placing the patient's ID in the first of the two slots and -1 in the second indicating that the appointment is available for double booking. If however there is no appointment available within the timeframe indicated by the double booking protocol, then the logic directs the search back to the time when the patient should return and begins checking again for a slot that can be double booked (indicated by -1 in the slot). In this way appointments are not double-booked until the diary becomes relatively full, allowing all patients the opportunity to have a full 15-minute appointment. Figure 4 shows an annotated screen shot of the diary where all these states can be seen.

Take in Fig 4

Dermatologist – time planning

For the purposes of the trial the dermatologists make the remote consultation assessments in their own time. However, when creating the model it was necessary to ensure that the dermatologists used time within their normal shift patterns to make the remote consultation assessments. When the model starts to run the pop-up screen asks for information on the number of doctors and their clinic times. In addition to this the pop-up also asks how many appointments per day will be removed from the diary which allows the dermatologist to use this time to conduct the remote consultation assessments. The appointments are removed from the beginning of the dermatologist's shift as this would ensure that they got the full time to deal with remote consultations, as

the face-to-face appointments could over-run the allocated time (especially in the real-world!). These slots are removed from the diary by placing an 'X' in each of the slots that will be dedicated to remote consultation assessments, meaning that it is not available for face-to-face appointments. The dermatologist therefore has dedicated time in which to assess the photos that had been submitted by the remote consultation patients, and checked for quality by the support staff, on a first-come-first-serve basis, to make an assessment and then respond. He would assess as many of these as possible within the time frame allocated by the shift pattern.

Experimental Design

The trial aimed to assess the viability and patient's satisfaction with the remote consultation. If it proved favourable then the system would be adopted initially for patients with mild cases of acne, and then extended to include other conditions such as eczema or psoriasis.

In order to compare the different scenarios three main outputs from the model were considered; the waiting times for severe case patients for face-to-face appointments; the number of mild case patients that had double booked appointments; and the percentage of remote consultation patients that received their response within the three-day target being suggested. The measurement of the amount of time that a severe case patient has to wait beyond their scheduled appointment (appt wait time), as well as the number of appointments that are double booked per week, give an indication of how busy the diary is. Appointments won't be double booked unless an appointment cannot be found within time allowed by the double booking protocol. These two outputs therefore give measures of the timescales faced by face-to-face patients when trying to book appointments in the diary. The inclusion of the number of severe cases seen per week gives further indication of how congested the diary is. As remote consultation patients are dealt with on a first-come-first-serve basis the response times experienced provides a measure of how busy the dermatologist is providing the remote consultation service. Table 1 shows the results from the simulation model given the current 7 day protocol with no remote consultations.

Take in Table 1

The experiments conducted show the implications of increasing the percentage of patients that use the remote consultation method between 5%; 10%; 15% and 20%. In order to allow time for the dermatologist to deal with the remote visit patients between 1 and 4 appointments per day are removed from the diary. Finally the effect of the double booking protocol is examined by reducing the number of days before double-booking is allowed from 7 days to 1 day. This makes 32 possible scenarios (see Table 2). Each of the 32 combinations was replicated 20 times and run for a simulated period of ten years, inclusive of a 2-year warm-up period where no data was recorded (Law and Kelton, 2000).

Results and Discussion

The results shown in Table 2 are the mean and standard deviations of the replications of each combination It was anticipated that by introducing the remote consultation at the 5% level, the dermatologist would be able to deal with the number of remote consultations effectively and that waiting times for the face-to-face appointments for severe cases would be reduced. However, the results (Table 2) show that if the double

booking protocol remains 7 days there is actually an increase in waiting times for severe patients (from 9.575 to 12.750). The reason for this is there is now a reduced number of possible appointments for severe case patients, but these can still be booked by the mild case patients. This can be seen by the fact that there is less than one more double-booked appointment (10.829 to 11.714) made by the mild case patients per week. The number of remote consultation patients that receive their response within three days is 92.231%. This calculation however does not take into account weekends, so any patients submitting their photos on a Friday are unlikely to receive their response within the allotted time. Increasing the number of appointments available for remote consultations at the 5% level further exasperates these problems, while making little difference to the percentage of patients receiving their response within three days.

If we look at changing the protocol from double booking being allowed after 1 day rather than 7 days, we notice that there is an increase in the number of double booked appointments (from 11.714 to 13.344) which allows for a decrease in the waiting times for severe patients (from 12.750 to 7.889), with a very slight negative impact on the number of remote consultation patients receiving their response within three days.

Take in Table 2

Increasing the number of patients receiving remote consultations to 10% while removing 1 appointment daily from the diary reduces the appointment waiting time for severe case patients to under the current situation, whilst also reducing the number of double booked appointments per week for mild case patients. The percentage of patients who receive their response within three days drops, indicating that there may at some points be a queue of patients awaiting their remote consultations and the dermatologist does not have time to deal with all the waiting remote consultations every day. Again reducing the double booking protocol from 7 days to 1 day further reduces wait times for severe cases and double booked appointments for mild cases, but again has a negative impact on the response time for remote consultations.

The results show that there is clearly a trade-off between waiting times and response times (see Figure 5 and Figure 6). As is evident from Figure 5 that removing 2 (or more) appointments from the diary each day allows over 90% of remote consultation patients to receive their responses within the three-day target, regardless of the level of patients that use this system. Overall, it can be seen from Figure 5 that results seem to converge after removing 2 or more appointments from the diary. Figure 6 shows the substantial impact of appointment removal on the wait times for the severe case patients.

Changing the protocol from a 7 day double booking protocol to 1 day, has a large impact on the severe cases waiting times with reductions of between 11.18% (5% e-visits, 4 appointments) to 64.5% (15% e-visits, 1 appointment). This shows that changing the protocol has a more significant impact on the results when compared with the other parameters examined (number of removed appointments and percentages of patients using remote consultation).

Take in Fig 5 and Fig 6

Conclusion

The main purpose of this paper is to demonstrate the use of available resources/data in order provide insights to nonexistent systems using simulation. Every simulation model scenario needs some input data in order to

investigate the effect of implementing or changing a system. However, when the prospective system doesn't exist in any current form, there is no data available to populate the starting scenario. Finding realistic data for proposed or non existing systems has always been a concern in the simulation community, this is particularly so for healthcare modelling. The paper has discussed in some depth how the model was designed to reflect a future (prospective) situation (the remote consultation system) whilst utilising information available through a current trial – even though the purpose of the trial was to test acceptability issues (by both patient and consultant), rather than the implementation issues.

This paper has illustrated the differences between the trial, the model of the proposed system, and current reality, and the implications that these differences have for the model. Many of the aspects of the trial, such as appointments spaced five weeks apart, were controlled in order to make valid comparisons between the trial and the existing system. The model itself is relatively generic so could be adapted for any clinic running a similar diary system considering introducing a remote consultation option, though the authors accept that in order to test the generalisability of the model we would need to take the model elsewhere to use with other data.

It was anticipated that introducing remote consultations into the existing system would reduce wait times for the severe case patients utilising the face-to-face appointments. The simulation model was able to show that with current double booking protocol the wait times for these patients would actually increase rather than decrease. This provided us with evidence that simply replacing the method of service delivery for a few patients would not be beneficial. The simulation model allowed us to experiment to determine the effects of changing the double booking protocol in conjunction with the implementation of remote consultations, providing scenarios which would improve wait times.

This model has demonstrated that simply incorporating the new method of delivery of consultations into the existing system may not be the most efficient way of utilising the equipment. Furthermore, the use of the technology that enables remote consultations may be utilised better by changing the process that encapsulates the system rather than simply altering the method of consultation. For instance, if the remote consultations were set up in schools – teenagers accounting for a substantial number of mild acne cases – with the aid of the school nurse, this could improve compliance, and reduce the amount of school missed by patients who would otherwise need to attend the hospital. Simulation modelling would be an ideal tool to experiment with different possible changes to the process that use of remote consultations would allow.

There are a number of lessons that can be drawn from this paper, for example, it was quite evident that the duration for building a thorough model would take more than time permitted for solving the problem. This is an issue that has been highlighted in a number of cases, particularly related to healthcare systems. The simulation community may need to research new ways for rapid development of simulation modelling. One way that this could be achieved is through the development of a series of generic models that could be adapted for specific cases without requiring large amounts of consultancy time. Secondly, and as an innovation to resolve the issue above, we have used a current trial as a secondary data (i.e. data that was already there and was not collected for the purpose of modelling) pool, even though it was designed for a different purpose. This proved a close approximation of the proposed reality and at the same time saved a lot of time and money for collecting primary data. Thirdly, which can be considered as a positive side effect,

outcomes from the model could be used to evaluate some of the aspects of the trial and inform decision makers with realistic impact of rolling out findings from the trial. Lastly, this exercise has highlighted even more the wide gulf between modellers and clinical practitioners regarding the benefits and uses of modelling to support decision making in healthcare. For example, in this case most clinicians were insisting on a particular use of the model (i.e. to assess the change of delivery), whilst, it would have been possible to look at wider issues as a result of implementing the new systems such changing the whole process beyond the premises of the clinic.

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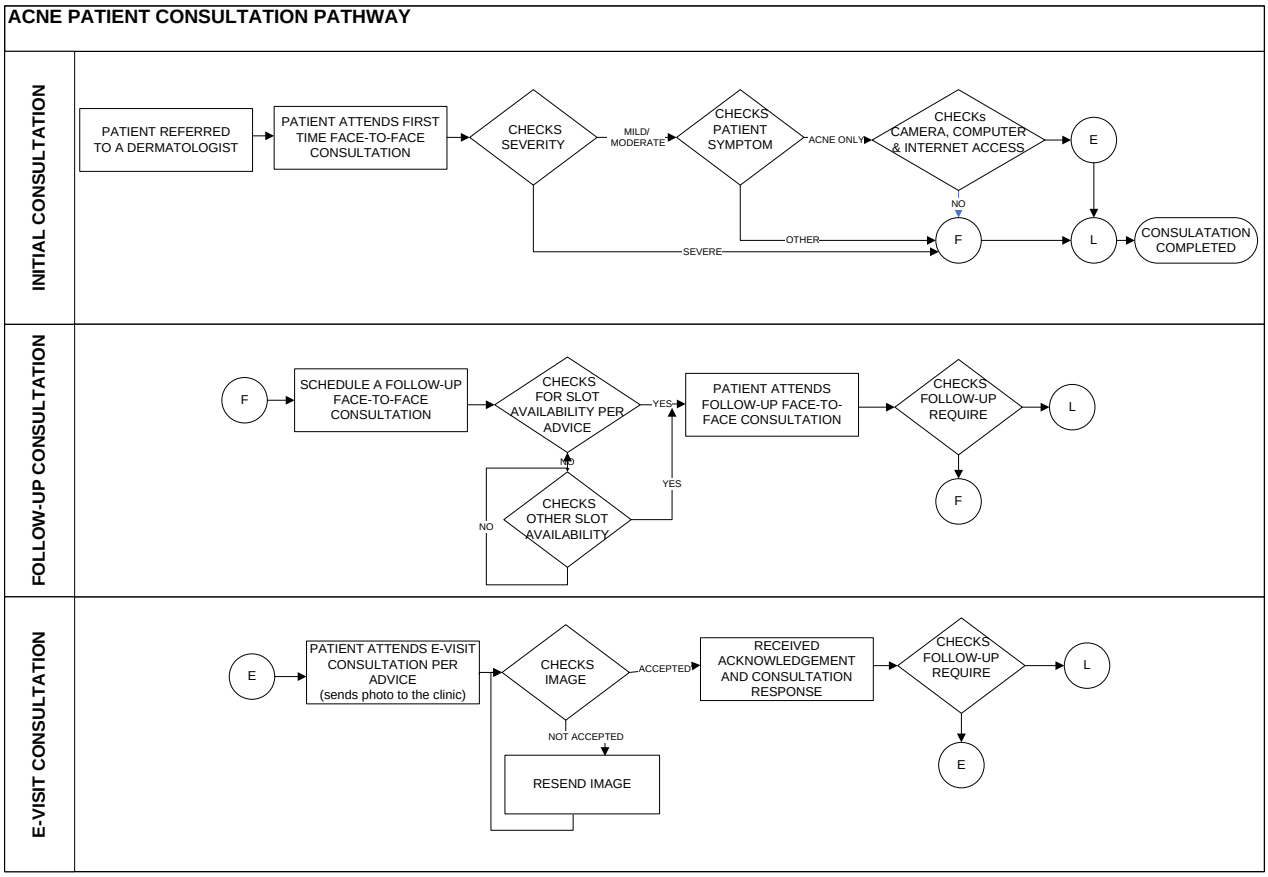

Figure 1 Conceptual model

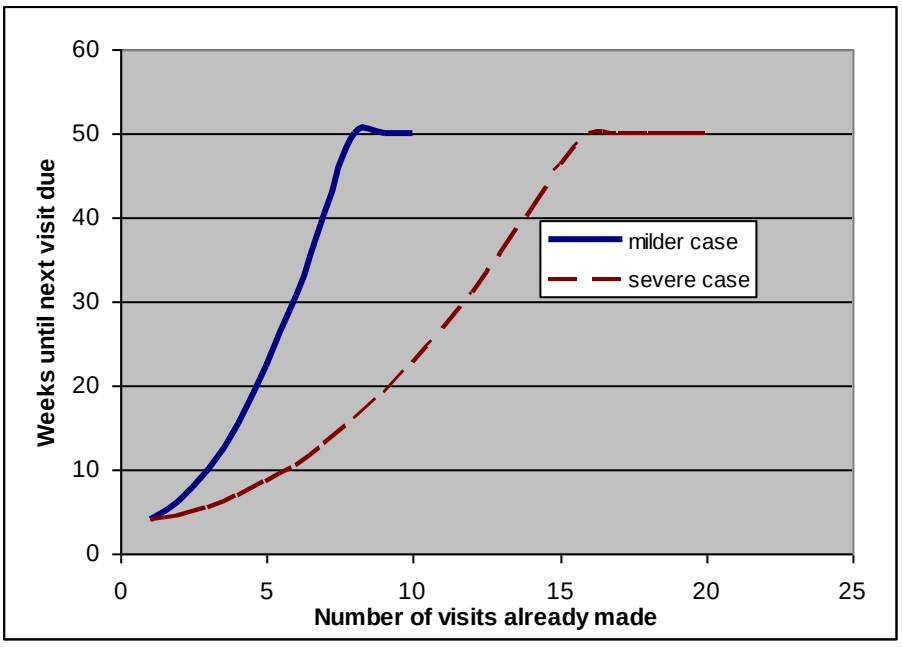

Figure 2 Calculating the time between follow-up appointments

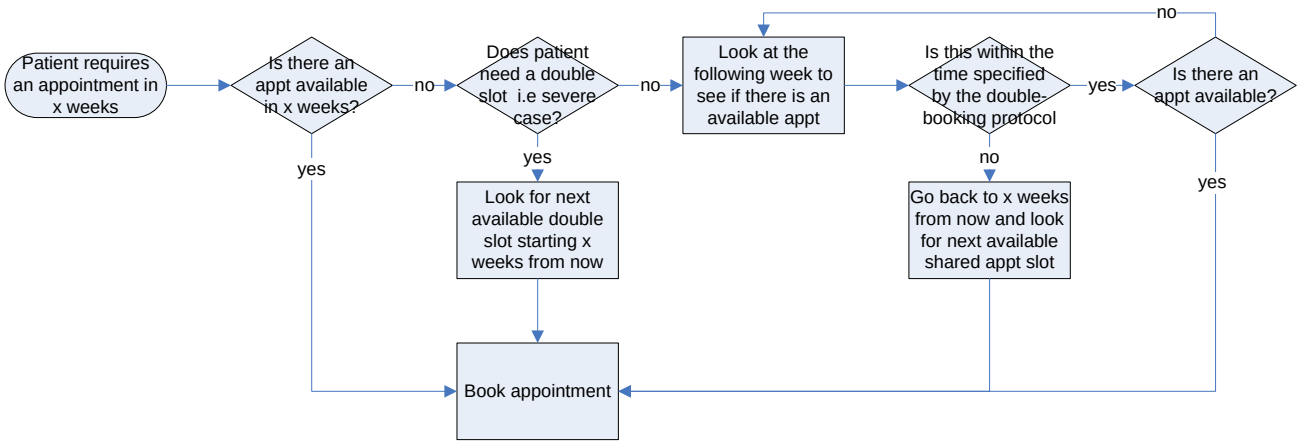

Figure 3 Double booking logic

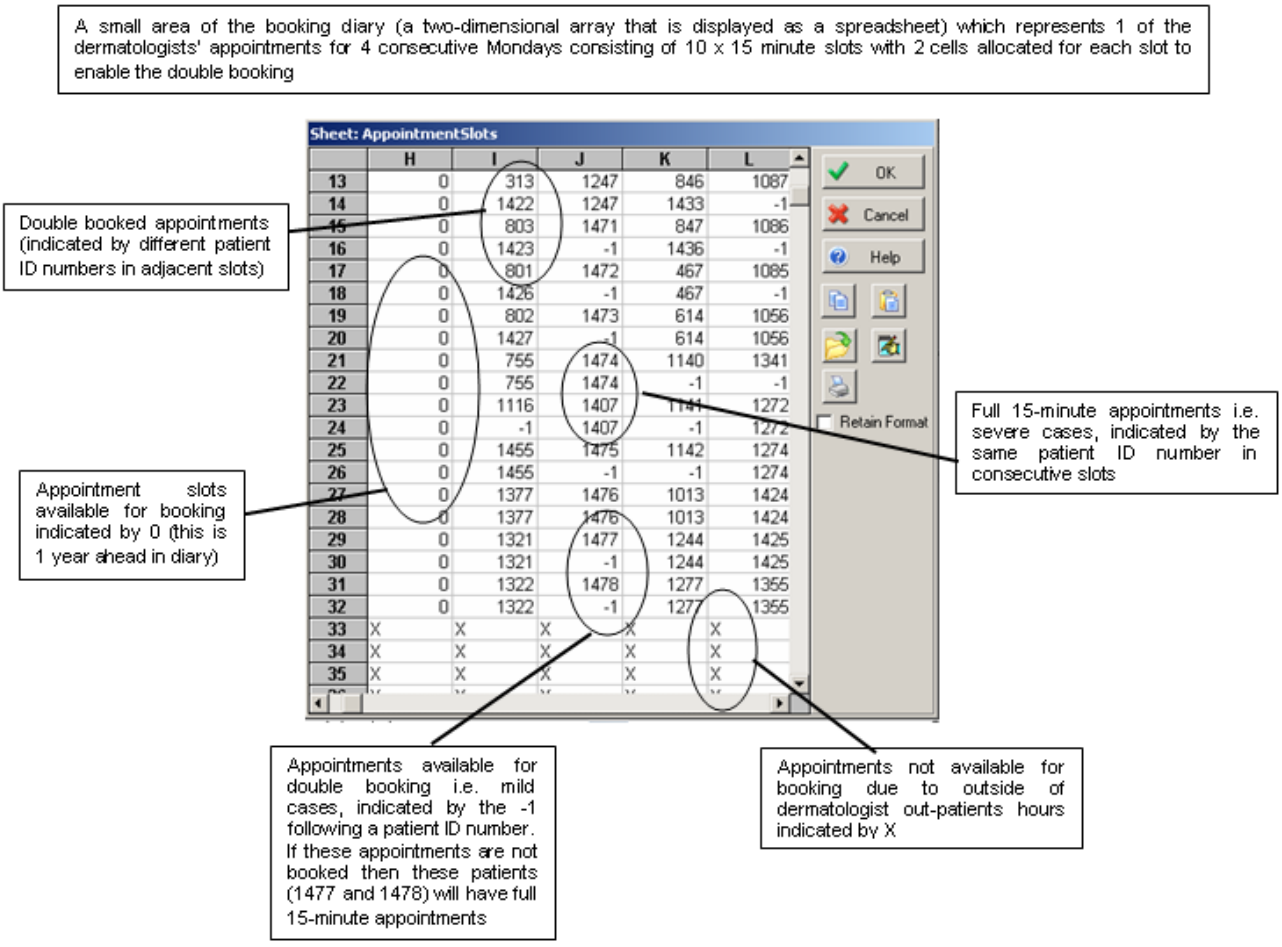

Figure 4 Annotated screen shot of booking diary

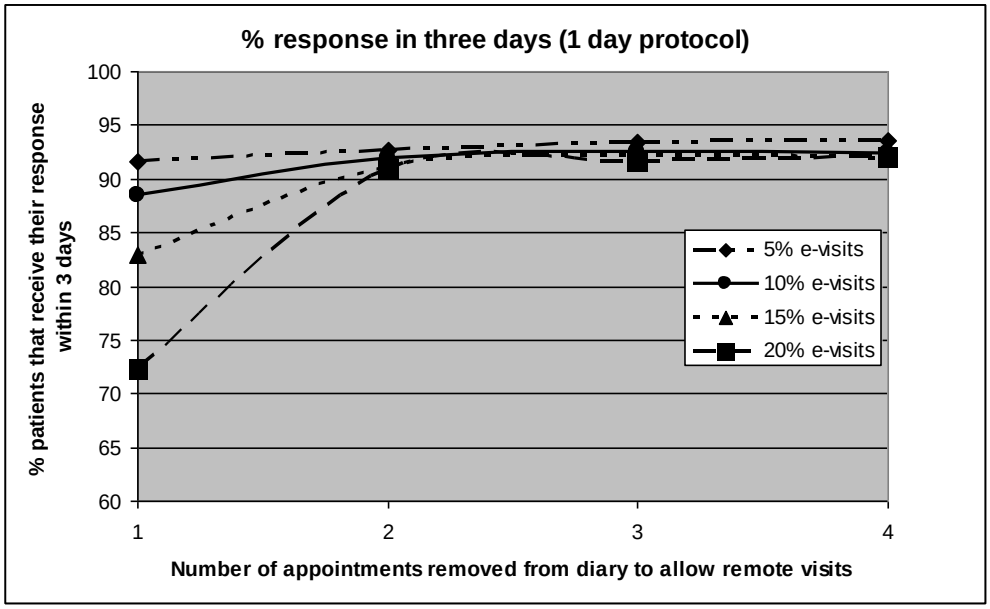

Figure 5 Responses within three days

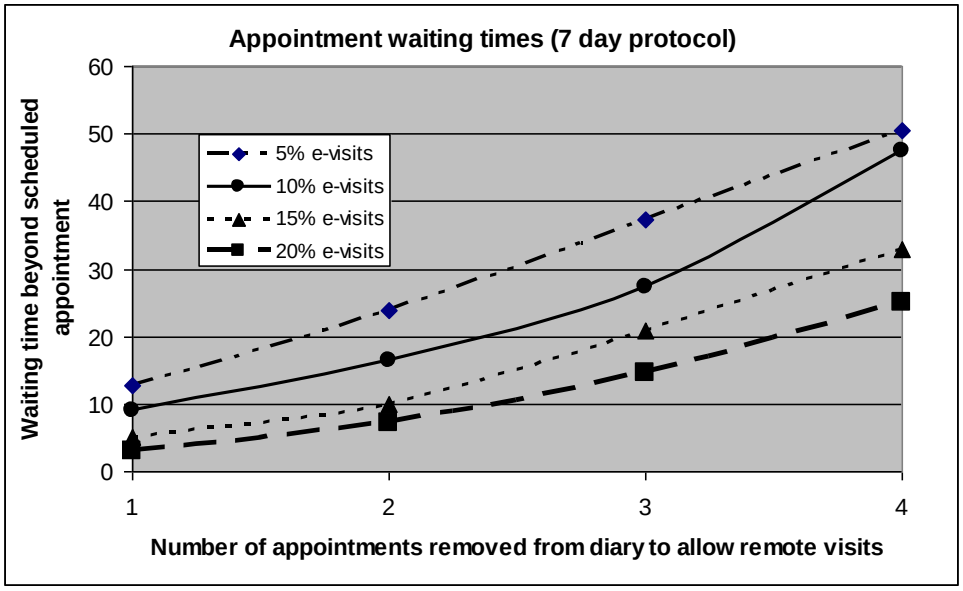

Figure 6 Appointment waiting times (7 day protocol)

7 day protocol with no remote consultations	appt wait times (severe cases)		cases seen per week (severe cases)		% response in 3 days	appts double booked per week	
	mean	sd	mean	sd	mean	mean	sd
	9.575	4.129	37.522	8.163	n/a	10.829	6.870

Table 1 Results for 7 day protocol with no remote consultations

		appts removed from diary per day for e-visits	appt wait times (severe cases)		cases seen per week (severe cases)		% response in 3 days	appts double booked per week	
			mean	sd	mean	sd	mean	mean	sd
protocol - 7 days	5% e-visits	1 appt	12.750	4.581	37.455	6.637	92.231	11.714	6.289
		2 appts	23.822	5.824	34.900	5.808	93.346	14.013	6.040
		3 appts	37.353	6.841	34.344	6.302	92.938	17.136	6.605
		4 appts	50.614	7.608	31.296	5.545	93.056	19.280	6.346
	10% e-visits	1 appt	8.976	3.938	38.065	6.356	90.048	8.879	5.710
		2 appts	16.521	5.090	35.820	6.473	92.217	11.113	5.604
		3 appts	27.288	6.125	33.422	5.940	92.820	13.864	5.984
		4 appts	47.461	7.465	32.284	5.867	92.830	16.893	5.866
	15% e-visits	1 appt	5.150	3.126	37.472	6.239	81.481	5.369	4.496
		2 appts	9.980	4.128	36.702	6.085	91.086	8.217	5.140
		3 appts	20.801	5.558	35.079	5.738	92.261	11.090	5.454
		4 appts	32.883	6.548	32.678	5.186	91.808	14.060	5.826
	20% e-visits	1 appt	3.044	2.302	38.092	6.621	71.466	3.593	3.962
		2 appts	7.133	3.600	36.194	5.659	91.033	6.058	4.321
		3 appts	14.526	4.809	35.468	5.399	91.582	9.019	4.707
		4 appts	24.965	5.952	32.848	5.280	92.022	10.674	5.032
protocol - 1 day	5% e-visits	1 appt	7.889	3.746	39.098	5.630	91.547	13.344	5.474
		2 appts	12.840	4.635	35.954	5.448	92.630	15.476	5.789
		3 appts	26.811	6.132	33.969	5.519	93.482	17.969	5.864
		4 appts	44.953	7.391	32.797	5.485	93.580	20.094	6.344
	10% e-visits	1 appt	3.615	2.577	38.530	5.863	88.397	9.555	4.527
		2 appts	9.600	4.110	36.708	5.613	91.916	12.904	5.475
		3 appts	22.023	5.764	35.299	4.962	92.439	15.165	5.451
		4 appts	35.341	6.808	33.345	5.050	92.387	17.386	5.687
	15% e-visits	1 appt	1.828	1.420	38.985	6.013	82.988	7.743	4.300
		2 appts	6.362	3.409	37.278	5.573	91.140	9.823	4.269
		3 appts	13.611	4.756	35.447	4.924	92.173	12.526	4.959
		4 appts	25.331	6.047	33.106	4.779	91.922	14.545	5.186
	20% e-visits	1 appt	1.566	1.104	38.474	6.899	72.223	5.585	4.163
		2 appts	3.226	2.424	37.407	5.827	90.904	7.401	3.856
		3 appts	9.032	4.007	35.489	5.412	91.609	10.255	4.385
		4 appts	19.027	5.385	33.937	4.460	92.050	11.798	4.394

Table 2 results table