



Mobile And Wireless Services For Outpatients

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Mobile And Wireless Services For Outpatients

At A Glance

It takes a number of years before the benefits of large healthcare IT programmes become apparent. While smaller projects often have a measurable impact from an early stage, the technology is usually only accessible to a limited number of patients and health workers, and the overall impact on the healthcare provider is limited.

In the UK it will be up to ten years before the National Health Service sees the full benefits of its National Programme for IT. A number of small-scale ehealth projects, such as using mobile wireless devices to remotely monitor asthma sufferers, have had an immediate impact on a small group of patients, but these have yet to be scaled up to a level where that impact shows up in statistics on NHS performance.

However, one application of mobile technology is already having an impact on the workflow of a number of health providers – an impact that can be assessed by examining published health department statistics. SMS patient reminder systems are relatively straightforward to deploy and have been shown to reduce the number of 'Did Not Attend' in outpatient clinics where they are being used. Patient reminder systems have provided niche communications companies with an entry point into the healthcare IT market. They are also providing revenue streams for larger IT vendors and mobile operators.

Patient paging is another wireless technology that is simple to deploy. Unlike SMS patient reminders, patient paging does not have an immediate impact on a health provider's workflow. However, in the short term, it improves the patient's experience of the outpatient treatment process and reduces stress in waiting areas. Patient paging could provide the foundation for a wireless system that guides both the patient and their medical records through the outpatient treatment process.

At a time when government health departments are seeking evidence of a return on their investment in IT, attention could turn to simple applications, such as patient reminders and patient paging, which are already producing results.

This report examines the market for SMS messaging and paging in outpatient care, and attempts to measure the true impact of the technology on the healthcare provider's workflow efficiency. This report also assesses the scope for combining SMS messaging and paging systems on a mobile platform that can then be used as a gateway to electronic patient records.

SMS patient reminders provide outpatient clinics with an alternative to overbooking.

The demographic group most likely to miss appointments also contains the heaviest users of mobile phones.

At present, revenues from patient reminder and paging systems are small. However, the technology provides an entry point into healthcare IT for communications vendors.

The patient reminder and paging systems markets will merge, with both systems using the same text-messaging platform.

Communications vendors could leverage their position within the healthcare IT market by adding medication reminder and patient support functions to their services.

This report examines the impact of SMS patient reminder systems and patient paging technology on the outpatient department. It contains an estimate of the size of the UK market for these services, case studies and profiles of key vendors such as Jtech, Advanced Messaging and McKesson.

Introduction

IT vendors are developing large solutions that, in the long term, will increase the workflow efficiency of healthcare providers. These solutions will also improve the patient's experience within hospitals and outpatient clinics. However, in the short term it has been smaller IT initiatives that have impacted on the performance, and the patient's perception, of the healthcare provider. One application in particular, the SMS-based Patient Reminder (SMS PR) system, has already been shown to reduce 'Did Not attend' (DNA) rates in outpatient clinics where it is used. Another application, Patient Paging (PP), has been adopted by a number of outpatient clinics and has improved the patient's experience of outpatient care.

In the short term it has been smaller IT initiatives that have impacted on the performance, and the patient's perception, of the healthcare provider.

There are a number of factors driving the market for these systems:-

- They are based on technology that is relatively simple to deploy and requires the minimum of integration with existing IT.
- They are low cost and can, in some cases, be funded locally from revenue with donations from patient associations.
- The impact of SMS PR on workflow efficiency shows up relatively quickly in published data on DNAs.
- Increasingly, time to treatment is becoming as important as the treatment itself.
- Patients expect health providers to use similar technology to that employed by companies in the service sector.
- Large IT vendors have discovered that SMS PR generates additional revenue and adds value to their portfolio of services.
- Small IT vendors and communications providers have discovered that SMS PR and PP provide ideal routes into a healthcare sector that is dominated by larger players.

A Waiting Game

The public's attitude to healthcare has changed markedly during the past 40 years. Advances in medical science, surgical techniques and drug research mean it is highly likely that today, whatever disease or illness a patient is suffering from, the healthcare provider either has a cure for it or can at least make it easier for the patient to live with the symptoms. This has led to more people being treated in hospital outpatient clinics. For these people the issue is no longer 'Will the consultant be able to cure or ease the symptoms of my illness?' but 'How long will I have to wait to be treated?'

For the patient the issue is no longer 'Will the consultant be able to cure or ease the symptoms of my illness?' but 'How long will I have to wait to be treated?'

Restaurants located in shopping areas use customer paging systems that allow diners to window-shop, or drink in a nearby bar, while they wait for a table to become available. Financial institutions use SMS text messaging services to alert customers whose accounts are about to go overdrawn. As consumers, members of the public are increasingly aware of ways in which mobile and wireless devices can be used to make their lives simpler. Now, as patients, they expect healthcare providers to use mobile devices to provide easier and more efficient access to healthcare.

The public is learning that technology can be used to alert them to a potential overdraft on their bank account or to make waiting for a restaurant table more pleasant – they expect similar services to be offered by health providers.

The issue here is one of equivalence: the service sector and financial institutions are using mobile communications to increase efficiency and cut costs, so there is no reason why healthcare providers should not tread the same path. In the long term, SMS PR could replace appointment letters – patients could be informed automatically, reducing the healthcare provider's requirement for clerical staff. In the short term, SMS PR systems have reduced the DNAs that were disrupting workflow in a number of outpatient clinics.

Here, though, a word of warning, as the long term may be very long indeed. Few commercial companies, low-cost airlines being a notable exception, have successfully migrated all their customers from paper-based to electronic appointment booking systems. The rest, such as telephone companies and banks, find it necessary to run electronic and paper-based systems side by side. Health providers will find it difficult to provide the incentives to get patients to use SMS PR. Levying fines on DNAs may encourage some patients. However, elderly patients, who are light users of mobile phone services, will prove difficult to move onto a SMS PR system.

Patient Paging is simpler to market to the patient. It could also be used to rationalise clerical support within outpatient clinics, centralise reception facilities and improve security. Few commercial organisations and very few other public organisations provide the open access to the public that hospitals do. Commercial organisations usually require people visiting their premises to make themselves known to someone in the main reception area. There the visitor is signed in and issued with a badge that will identify them while they are within the building. A visitor to a hospital can enter the building unchallenged and, in many cases, roam at will. In this respect, hospitals resemble retail establishments but without the security personnel and surveillance infrastructure needed to monitor visitors.

To require everyone, including relatives visiting patients, to sign in at a central reception facility and collect a pager would be unworkable given the current state of paging and messaging technology. In the future, however, paging technology will become cheaper, and mobile chipsets will be built into an increasing number of consumer electronic devices. As health providers come under increasing pressure to reduce costs and increase workflow efficiency, it is likely that they will deploy paging, or some other form of electronic messaging technology, to manage the movement of patients and visitors within their establishments.

As health providers come under increasing pressure to reduce costs and increase workflow efficiency, it is likely that they will deploy paging or some other form of electronic messaging technology to manage the movement of patients and visitors within their establishments.

Rapid Deployment

SMS PR and PP systems are simple to deploy, as they require minimal integration with the health provider's existing IT infrastructure – for example Patient Administration Systems (PAS). Funding SMS PR systems is not an issue, as they are purchased as a licensed service and represent a revenue expense rather than a capital cost. As PP systems improve the patient's experience of a particular clinic and cost relatively little to deploy, individual hospitals have purchased systems using charitable donations rather than applying for central funding.

Many health providers already outsource either all or some of their IT infrastructure and merely need to add SMS PR to the menu of services hosted on their IT provider's servers. However, the ease with which both SMS PR and PP can be deployed represents an opportunity for mobile operators and niche communications vendors who are seeking a route into the healthcare IT market.

How long this window of opportunity remains open depends on two factors, the first being how long it takes health providers to roll out electronic patient records and online appointment booking. When these two applications are fully deployed, there will be pressure to integrate them with SMS PR and PP services. This will give vendors who are hosting PAS an advantage over smaller SMS PR and PP vendors. The second threat to SMS PR vendors in particular is the apparent success of the service they are offering and the prospect that government health departments may want to 'own' the service.

Taking The Credit

Whereas even a decade ago the cure for a particular disease would be a newsworthy event, today the public have come to expect that health providers can either cure, or at least ease the symptoms of, most illnesses. As well, the complexity of modern medicine means that most new clinical processes are beyond the understanding of the general public. The patient expects the health provider to be able to treat them, and the issue is no longer 'if' but 'when and how quickly'. Increasingly voters and the media judge the success of a government's healthcare policy by the length of time a patient must wait for treatment.

Governments worry that significant investment in healthcare IT has yet to produce results – in part because deployment has been slow but also because an aging population's demand for healthcare is wiping out performance gains won by deploying updated PAS infrastructure.

There is, however, an exception: SMS PR has had a significant and demonstrable impact on some hospital performance figures. In the UK the number of patients treated in outpatient clinics is published on a quarterly basis. These figures seem to indicate that the number of patients failing to keep their appointments falls by up to 30% where SMS PR has been deployed. The threat to the small vendors who have provided these systems is that, in the absence of good news regarding the impact of major IT initiatives, government health ministers will 'adopt' smaller initiatives that appear to be successful.

As SMS PR and PP are only loosely integrated into the health provider's existing IT infrastructure, they are relatively straightforward to deploy and easily funded.

These systems provide the niche communications vendor with an ideal entry point into the healthcare IT market.

In the longer term, tighter integration of SMS PR and PP with existing IT infrastructure will become necessary.

Today the health provider is judged as much on how quickly they provide care as on the quality of the care itself.

In the UK this has already happened with wireless alarm systems for domiciliary workers, where the government took 'ownership' of the system and appointed a single approved vendor. If the same happens with SMS PR, smaller niche vendors could find themselves eased out of the market.

DNAs – Do They Matter?

It has been claimed that DNAs cost the UK's National Health Service (NHS) £300 million per annum – based on approximately 4.5 million missed appointments at £67 each. This is, of course, an exaggeration since if one patient fails to keep their appointment the clinician will see another one instead.

Other organisations suffer from DNAs. Airline operators who offer low cost fares, or flexible booking, experience 'no shows' and deal with these by overbooking flights. Hospital outpatient clinics do the same – if their average DNA rate is 8% they arrange 8% more appointments than the clinician has time to deal with. However, patients and airline passengers have radically different needs and an outpatient appointment is not a discretionary purchase.

The patient may see their final appointment as unimportant – either regarding themselves as cured or resigning themselves to living with the symptoms of their ailment. However, a final appointment can yield significant information, for example whether a patient's illness is likely to recur. As well, the final appointment provides the last opportunity to encourage the patient to take on the responsibility for their own health and future well-being.

Unlike airline passengers, each patient is different and the medical notes of a DNA must be replaced with those of an alternative patient. While an appointment will not be lost entirely, the rescheduling will incur additional staffing cost that will drive the cost of the appointment up above £67.

Overbooked airlines bump passengers off flights, offering them compensation and, where appropriate, free accommodation in hotels. No compensation is available for patients in overbooked outpatient clinics, who must either endure lengthy waits or, in extreme cases, return home without being seen by a consultant. Patients in these situations become frustrated and sometimes aggressive, posing a threat to themselves, other patients and members of staff.

Why Paging?

Paging is marketed as a service that can make the patient's experience within an outpatient clinic less unpleasant. When deployed, electronic patient records could facilitate the downsizing of the administration and reception facilities attached to individual outpatient clinics. It will then become increasingly important to locate and correctly identify a patient while they are within the hospital or clinic.

Patients have different needs from airline passengers, so the way a health provider deals with DNAs and the way an airline deals with no-shows will differ markedly.

Overbooking causes delays – patients become frustrated and sometimes aggressive, posing a threat to themselves, other patients and members of staff.

Paging is marketed as a service that improves the patient experience with the outpatient clinic. However, it could also be used to improve workflow.

A consultant in an outpatient clinic could use a pager, issued to the patient at the hospital's central reception desk, to retrieve the patient's electronic record. The cost savings yielded by such a system could, in part, be realised today if the patient were given their own, paper-based, records to carry to the outpatient clinic. However, hospital administrators would be unhappy working with such a system. The deployment of paging technology that unlocked or even stored patient data would provide an opportunity to modify working practices and cut down on administration costs.

The impact of pagers on workflow efficiency is some way down the line, and today PP systems merely give the patient the choice of where to wait for their appointment. This reduces frustration amongst patients who smoke, have young restless children or who are subjected to long waits while they wait for results or whose appointments are delayed.

SMS PR and PP –Technical Overview

Both SMS PR and PP systems use wireless networks to inform patients of impending outpatient appointments. The difference is that a SMS PR system uses a wide area mobile network whereas a PP system employs a health provider's own wireless local area network.

A SMS PR system consists of client software running on a PC – usually located in the outpatient clinic – and a messaging application hosted on a remote server. Messages are routed to the patient over a mobile operator's GSM network.

By contrast, all the hardware and software that make up a PP system – the PC and the unit that communicates with pagers – are located on the health provider's premises. Here the messages are routed to the patient across a network that typically uses a number of splinter frequencies in the 450–470 MHz waveband.

The current generation of messaging and paging systems operates relatively independently of PAS, and messages have to be initiated manually by a member of staff in the clinic – often this involves more effort than sending a letter. In the future, tighter integration with PAS will allow messages to be initiated automatically, yielding savings in time and effort over paper-based systems.

Niche Markets For SMS PR

Outpatient clinics specialising in mental health suffer some of the highest DNA rates in the UK – up to 30%. One communications vendor, Strand Technologies, has identified mental health as a key niche market, which it addresses with a combination of SMS PR and online support services for mentally ill patients who are treated in the community. The company found that a reminder system alone would not persuade patients to keep an appointment. It also recognises that compliance with medication is a politically sensitive issue, as in a number of high profile cases patients have become violent after failing to adhere to treatment regimes.

At a technical level both SMS PR and PP systems are relatively simple – deploying them only becomes complex when tighter integration with PAS is required.

Some outpatient clinics suffer disproportionately high rates of DNAs, and SMS PR alone will not solve the problem.

Reminder systems for young people with sexually transmitted diseases are another niche market with unique requirements that can only be met with a comprehensive patient support service. While these applications require extra work and customisation, they provide vendors with the opportunity to develop platforms that support sophisticated ehealth services such as medication prompting and treatment compliance monitoring.

Diminishing Returns

Following deployment of SMS PR, some outpatient clinics report dramatic falls in their DNA rates even though take-up of the services has been relatively small (typically 15%). This is due to the fact that the heaviest users of mobile phones and text messaging are people between the ages of 16 to 34 – the demographic group that, coincidentally, is twice as likely as the rest of the population to forget, or not bother, to keep an outpatient appointment.

If a clinic records 30% fewer DNAs following the take-up of SMS PR by just 15% of its patients, it is obvious the best that can be achieved by expanding the service to cover the other 85% of patients is the elimination of the remaining 70% of DNAs.

In some clinics, such as rheumatology, which have a high proportion of elderly patients – who are both light users of mobile phones and tend to keep outpatient appointments – the impact of a SMS PR system would be almost non-existent. It may only be worth extending SMS PR to these clinics when the service is deployed across the entire health sector as a component within an online appointment booking service.

Can The Figures Be Trusted?

According to published statistics, outpatient clinics that use SMS PR have seen DNA rates on initial appointments fall by up to 30% (from approximately 8% to 5%). However, it is worth examining how much of this fall is due to SMS messaging alone. SMS PR systems are usually deployed in conjunction with a range of other initiatives aimed at reducing the number of appointments missed by patients. Some clinics publicise the importance of keeping appointments in local media and via poster campaigns in GP surgeries. Some clinics also employ 'Patient Focused Booking' (PFB), and the patient may receive appointment reminders by post or via a voice call to their landline.

Nevertheless it should also be noted that in trials where SMS PR systems were only used to encourage patients to attend initial appointments DNA rates for follow-up appointments remained unchanged. If measures other than SMS PR were impacting on DNA rates, a decline in rates for both initial and follow-up appointments would be expected.

A SMS system has a radical impact on DNA rates, but expanding take-up of the service will yield diminishing returns.

On paper the impact of SMS PR systems on DNA rates is impressive – but do the figures tell the whole story?

Market Size and Potential

SMS Patient Reminders

A healthcare provider buys a licence (typically £4,000 per annum) to use a SMS PR system in one of its outpatient clinics and then pays a fee (typically £0.10) for each text reminder sent to a patient. If SMS PR systems were deployed throughout the NHS, and all patients were reminded of their appointments with a text message, the market for software and messages would be worth up to £20 million per annum. However, DNAs are spread widely and, within some specialities, thinly over a large number of outpatient clinics.

In theory the market for SMS PR could grow to £20 million per annum and for PP equipment to £5.3 million. In practice, low take-up of services and pressure on pricing will limit revenue growth.

Rather than a DNA costing the full value of an appointment, they marginally increase the administration costs associated with the appointment. This additional cost, incurred during rescheduling, is no more than £20 per patient. This means an outpatient clinic needs to eliminate 200 DNAs per annum to justify the licence fee for a SMS PR system. While systems are sold on a clinic-by-clinic basis, the UK market is limited to the 400 clinics that could reduce DNAs by this amount.

There are other cost savings associated with SMS PR – such as reducing the cost of starting a patient's treatment from scratch if a DNA leads to a recurrence of the patient's illness. As well, some specialities, such as mental health, may come under political pressure to reduce DNA rates throughout the country and install SMS PR in all clinics regardless of size.

As more players enter the market, licence fees and the price of text messages will come down. Licence fees could fall to £2,000 per annum by 2010 from their present level of £4,000, and text messages from £0.10 each today to £0.02 by 2010. Vendors will also come under pressure if SMS PR is added to larger healthcare applications on offer from companies hosting PAS. In this case, the revenue earned from SMS PR will form part of the fees charged for hosting patient ebooking applications.

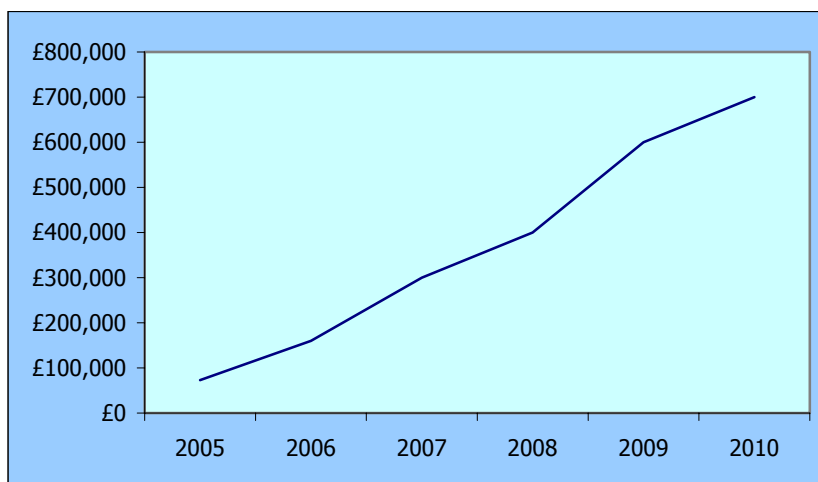
On the other hand, licence and messaging revenue may be supported by the increases in the amount of integration required when patient ebooking and electronic records are deployed and as niche IT vendors build more features, such as medication reminders, into their offerings.

Take-up rate for text messaging services also influences the amount of revenue earned by SMS PR vendors. It is assumed that the present rate of approximately 15% will rise to nearer 40% by 2010 as a larger proportion of the baby boomer generation, who are technology-savvy, receive treatment in outpatient clinics.

Estimated Annual Revenue (SMS PR Systems) 2005 – 2010

	2005	2006	2007	2008	2009	2010
Systems	18	40	100	200	300	350
License Fee (pa)	£4,000.00	£4,000.00	£3,000.00	£2,000.00	£2,000.00	£2,000.00
Text Fee (each)	£0.10	£0.07	£0.05	£0.04	£0.03	£0.02
SMS PR take up	15.00%	20.00%	25.00%	30.00%	35.00%	40.00%
Estimated Revenue	£73,000	£160,000	£300,000	£400,000	£600,000	£700,000

Estimated Annual Revenue (SMS PR Systems) 2005 – 2010



Patient Paging

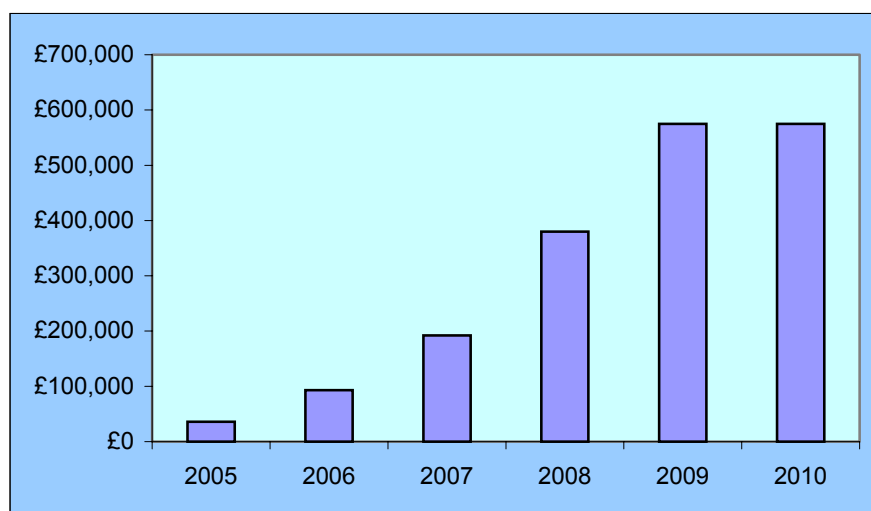
The health provider purchases PP systems outright. Typically a system costs £500 for the client software and the base station/docking bay for the pagers, and £70 each for the pagers themselves. Smaller clinics that receive significant charitable donations may purchase a system regardless of whether the numbers of patients visiting at any one time justifies its use. In the main, however, as with SMS PR it will be the busiest outpatient clinics that purchase PP systems. A health sector-wide deployment of the technology would put pressure on revenues, although, as with SMS PR, PP vendors could add PAS-specific features to their products to support prices.

Relaxation of the use of mobile phones within hospitals could encourage SMS PR vendors to extend their services to include in-clinic paging. The introduction of PP devices that run on the hospital's existing WLAN could also impact positively on revenue growth.

Estimated Sales (Patient Paging Systems) 2005 – 2010

	2005	2006	2007	2008	2009	2010
Systems	30	60	120	200	250	250
Price of System	£500.00	£500.00	£400.00	£400.00	£300.00	£300.00
Price of Pager	£70.00	£70.00	£60.00	£50.00	£50.00	£40.00
Pagers per System	10	15	20	30	40	50
Estimated Sales	£36,000	£93,000	£192,000	£380,000	£575,000	£575,000

Estimated Annual Sales (Patient Paging Systems) 2005 – 2010



Integration And Extension

Loose integration with PAS and health sector-wide IT deployments, such as patient appointment ebooking, while simplifying deployment will limit the functionality and development of SMS PR and PP systems. Tighter integration would provide vendors with a platform onto which they could build advanced patient support services such as medication compliance monitoring and remote counselling. While some examples of these applications are starting to appear in specialities such as mental healthcare, others, such as SMS-assisted medicine reminders, will not reach their full potential until electronic patient records (EPR) have been deployed. When EPR are fully operational, there will be pressure on SMS PR and PP system vendors to merge their applications and provide a single product offering. Such services will provide the mobile device user with a utility that guides them through the outpatient process. It would also act as a key to both identify the patient and provide access to their patient data, wherever they are within the treatment process.

Loose integration with PAS and health sector-wide IT deployments, such as patient appointment ebooking, while simplifying deployment, may also limit the functionality and development of SMS PR and PP systems.

Conclusions

Today patients are less willing to wait for long periods in outpatient clinics. Overbooking, the traditional way of filling appointments left free by patients who 'Did Not Attend' (DNAs), can cause further delays and frustration.

DNAs cause disruption to the workflow within an outpatient department and, if the failure of a patient to complete their course of treatment leads to a relapse or complications, increases treatment costs and puts additional pressure on the provider's limited capacity.

Patients expect the interface between themselves and the healthcare provider to be supported by the same technology that companies in other sectors of the economy use to keep their customers informed.

A large proportion of DNAs are in the demographic group that makes most use of mobile telephone services such as text messaging. While this means systems already installed are proving highly effective in reducing DNAs, large-scale deployments could suffer from diminishing returns. Vendors should therefore consider enhancing their existing SMS-based appointment reminder services by adding medication reminder services.

Although SMS PR and PP systems do not generate large revenue streams, they provide an entry point into the healthcare IT market for small communications companies and mobile operators. IT vendors who are already established in the healthcare sector can provide text messaging as an added value service packaged with their existing hosted applications.

While patient paging is currently based on proprietary network technology and devices, the relaxation of restrictions on the use of mobile phones in hospitals will allow vendors to merge SMS PR and PP systems and provide both services on the same SMS platform.

Combining medication reminders, appointment reminders and patient paging, then offering them to healthcare providers on a mobile platform, would increase the incentive to fully incorporate mobile services within patient administration systems. This would provide the mobile communications vendor with an opportunity to position themselves as key providers of healthcare IT infrastructure.

SMS PR provides outpatient clinics with an alternative to overbooking.

The cost of a DNA can be high if a patient suffers a preventable relapse.

Patients expect to use the same technology in a hospital as they use in the service sector.

The demographic group responsible for a large proportion of DNAs also contains the heaviest users of mobile phones.

At present, revenues from SMS PR and PP systems are small. However, the technology provides an entry point into healthcare IT for communications vendors.

The market for SMS PR and PP systems will merge, with both systems using the same text-messaging platform.

Communications vendors could leverage their position within the healthcare IT market by adding medication reminder and patient support functions to their SMS PR offerings.

Case Studies

Addenbrooke's PCT

In 2003 the dermatology outpatients clinic of Addenbrooke's NHS Hospital Trust in Cambridge began trials with a SMS PR system supplied by Advanced Messaging – a UK-based specialist communications vendor. Patients referred to the clinic are given the option of being reminded of appointments by a message sent to their mobile. For reasons of security and confidentiality, the reminder received by the patient does not refer to the particular clinic where the appointment has been made. When the patient receives the reminder they are given the option of changing the appointment if time or date allocated is no longer convenient.

Since the system was installed, the clinic has seen DNAs fall from 8% (the national average rate for dermatology clinics is 8.7%) to 5.5%. However, the system did not remind patients of follow-up appointments, and the clinic's DNA rate for subsequent appointments remains at 9.2% (the national average for dermatology clinics is 8.5%).

Addenbrooke's ear, nose and throat (ENT) department is using a similar SMS PR system, supplied by Mikkom. This system also reminds patients of follow-up appointments. DNA rates in ENT are 4% for initial appointments (national average for ENT is 9.2%) and 9.3% for follow-up appointments (national average for ENT is 14.7%).

Addenbrooke's At A Glance

The dermatology outpatients department of Addenbrooke's NHS Hospital Trust has achieved an impressive reduction in its DNA rate for initial appointments, which it attributes to the use of SMS PR.

Analysis

Addenbrooke's experience with SMS PR illustrates how easily patient reminder systems can be put in place and how quickly they have an impact on DNA rates. The hospital is close to deciding which system, Mikkom or Advanced Messaging, they will standardise on. To gain the most from either system, it will be necessary to tightly integrate them with the hospital's PAS infrastructure. If this is done, then Addenbrooke's could use SMS PR to reduce DNAs across the board and increase workflow efficiency.

Yorkhill Children's Hospital

In 2003 the outpatient department of Yorkhill Children's Hospital in Glasgow had a DNA rate of 20%. In December of that year the hospital began a Patient Focused Booking (PFB) initiative, which used a call centre operation to guide patients through the outpatient appointment system. As SMS PR was used as part of the PFB initiative, it was difficult to determine, over the long term, whether text messaging or other forms of communications reduced the DNA rate for Yorkhill's outpatient department.

However, for two months during 2004 the hospital ran a series of trials to assess the impact of PFB and SMS PR. The results were as follows.

	SMS PR	No Reminder
DNAs (Conventional Booking)	16.9%	9.6%
DNAs (Patient Focused Booking)	6.5%	3.4%

Yorkhill At A Glance

The outpatient department of Yorkhill Children's Hospital treats 100,000 children per annum and in 2002 installed a SMS PR system as part of a Patient Focused Booking initiative.

Analysis

The outpatient department of Yorkhill had a very high DNA rate, and its trial to determine the relative impact of SMS PR and PFB was of relatively short duration. A longer and broader trial and cost-benefit analysis would have to be undertaken before any firm conclusions could be drawn as to the relative merits of each approach. However, it does appear from the data collected to date, given the cost and complexity of setting up a call centre operation to handle PFB, that the simplicity of SMS PR makes it relatively cost effective.

Wolverhampton Social Services

Wolverhampton Social Services are using Strand Technologies' Carenotes patient support system to improve communications between themselves and the outpatient department of the local NHS Mental Health Trust. The system uses SMS text messaging and email to remind patients to take medication and attend outpatient appointments or meetings with social workers.

Following a number of high profile cases involving attacks on members of the public by mentally ill patients who were being treated in the community, there has been political pressure on social service and healthcare providers to ensure that outpatients are supported and, where possible, compliance with medication is monitored.

Mental health outpatient clinics suffer some of the highest DNA rates, an average of 22% for first appointments and follow-up appointments. Wolverhampton's rate is particularly high (40% for initial appointments and 30% for follow-up appointments).

Wolverhampton At A Glance

Wolverhampton Social Services have deployed the Carenotes patient communication system to support mentally ill patients who are being treated as outpatients.

Analysis

Wolverhampton Social Services' deployment of SMS PR illustrates the importance of wrapping simple patient appointment reminder services with other support functions. Strand Technologies has been able to add value to a simple SMS service and make it appealing to a sector of the healthcare service that is under political pressure to roll out patient support services. The fact that the user, in this particular case, is a social services department rather than a healthcare provider illustrates that there is more than one route into the SMS PR market.

Hexham Hospital

Initially, Hexham Hospital installed a 36 pager system in one of its outpatient clinics after an executive from the Northumbria Healthcare NHS Trust saw a similar system in use at Disneyland in Florida. The perceived benefit of the system in a healthcare environment is its ability to enable the patient to wait for appointments in areas other than the outpatient clinic itself – for example shopping areas and cafeterias. The technology is seen as particularly useful for parents with small children that become restless if made to wait in one place for any length of time. PP is also seen as a way of reducing stress and cutting the numbers of incidents that involve frustrated patients verbally or physically attacking hospital staff.

Hexham are using the relatively bulky Jtech 'Glowster' pager rather than a 'pocket and forget' pager system, as it was thought patients would be less likely to forget to hand in these pagers as they left the hospital. The Glowster has a flashing light and a vibrator to alert the patient and is particularly suitable for deaf and partially sighted patients.

The use of PP systems is to be extended to other hospitals within the Northumbria Healthcare NHS Trust.

Hexham At A Glance

Hexham Hospital, part of Northumbria Healthcare NHS Trust, has installed a Patient Paging (PP) system in its physiotherapy, X-ray, maternity and antenatal departments and has a total of 128 pagers in use on its site.



Analysis

Hexham chose the Jtech solution primarily to make the patient's experience within the outpatient department more pleasant. In the future, however, the use of PP will increasingly be justified on the grounds that it increases security within hospitals and improves workflow efficiency. Deployment will be linked to other initiatives that change the way both the patient and their medical records are managed within an outpatient clinic.

Vendor Profiles

McKesson



McKesson is making a major push into the SMS PR market. The company has taken TextTools' MediTxt patient reminder system and bundled it with its TotalCare solution. The company hopes to sell MediTxt across the entire NHS rather than on a clinic-by-clinic, or even a trust-by-trust, basis. McKesson is well placed to leverage its position as a provider of NHS-wide solutions to drive the adoption of its SMS PR solution. To date, the company has not sold a SMS PR system in the UK.

The company claims that DNAs cost the NHS £320 million per year; however, this figure assumes that a DNA represents a complete loss of an appointment valued at £67 each and ignores the fact that outpatient clinics overbook to account for a certain level of DNAs.

McKesson At A Glance

McKesson is an established provider of IT services to the healthcare sector and is the 16th largest company in the US, with a turnover of \$16 million. It is a prime contractor for the NHS-wide clearing service for the NHS electronic staff record service.

www.mckesson.co.uk
www.txttools.co.uk



Analysis

In the UK, SMS PR is a niche market, although this may change when NHS-wide IT applications and services, such as patient appointment ebooking, are rolled out. Then vendors who are well placed within the NHS's National Programme for IT may use small-scale services, such as SMS PR, to generate additional revenue and differentiate their services from those competitors who are offering Local Application Service Providers.

In the short term, marketing SMS PR on the basis that it will cut costs by reducing DNAs may capture the attention of the media, but unless these services offer a broad range of potential benefits, for example better patient support and increased workflow efficiency, penetration will be light and revenues will remain flat.



Advanced Messaging Systems (AMS)

The two entrepreneurs who formed Advanced Messaging Systems (AMS) recognised that while SMS PR was a niche market it could generate enough revenue to support a small communications company. The company points to the relatively low cost and simplicity of SMS PR compared to Patient Focused Booking (PFB) initiatives that require the setting up of a call centre. AMS have recently had the opportunity to compare the relative impact of their SMS PR system and PFB on DNA rates at Yorkhill Children's Hospital in Glasgow.

The AMS system consists of a client software package that runs on a PC within the clinic, and a messaging application that is hosted on a remote server. The company provides training and analysis tools with the client software, and carries out system integration for healthcare providers. Currently AMS is developing an intelligent agent that provides expert support for patients.

AMS's business plan is based on the likelihood of a company flotation within five years, although the current owners are not ruling out the possibility of a merger with a larger healthcare IT vendor or communications company.



AMS At A Glance

Advanced Messaging Systems (AMS) received first-round funding of £270,000 in 2004 (£100,000 of this was from the Scottish Enterprise Board). The company is focused on SMS PR and expects to see a number of its trial installations convert to full commercial deployment during 2005.

www.advanced-messaging.com

Analysis

As a specialist in a niche market, AMS are well placed to capture a significant share of SMS PR sales in the UK. However, as larger IT vendors are showing an interest in the strategic value of this market, AMS recognise they must continue to innovate to maintain their lead. The addition of patient support tools to their SMS PR system should help and, as larger NPfIT applications are deployed, so too will their ability to integrate SMS PR with PAS. If the company's progress to date is maintained in forthcoming years, AMS could provide a larger IT or communications vendor with a route into the healthcare market.

Jtech



Jtech market their paging system to the healthcare sector under the brand name PeopleAlert. The system uses a wireless pager operating at a range of splinter frequencies between 450 and 470 MHz. The pager itself has a flashing light, a vibrator and a recharging time of three hours. Typically the pagers are sold in sets of 20.

During the past three years Jtech have installed paging systems in over 1,000 hospitals across the USA, where healthcare has earned the company \$1 million of revenue. PeopleAlert has been available in the UK market for 12 months, during which time Jtech have installed 30 systems.

The company also supplies a call system that enables consultants to let the outpatient clinic's administration centre know that they are ready to see the next patient. A system called Genesis, which is due to be released later in 2005, will enable an outpatients administration centre to send appointment reminders and alerts to the patient's mobile phone in the form of a text message.

Jtech At A Glance

Jtech was formed in 1988 and supplies customer paging systems for use in restaurants and other leisure sector organisations where customers have to wait to be served. It has 50,000 installed systems in the USA and has recently begun targeting outpatient clinics in the UK with its PeopleAlert product.

www.jtech.com



Analysis

As PeopleAlert requires little or no integration with PAS, Jtech have managed to install a relatively large number of patient paging systems in the short time it has been available in the UK. As restrictions on the use of mobile phones within hospitals are relaxed, the company could find itself competing with SMS PR vendors who are extending their service to alert patients within the outpatient clinic itself. Its soon-to-be-released product, Genesis, could help fight off competition, as could tighter integration of patient paging with the healthcare provider's PAS infrastructure.

SIMPill



In early 2005 SIMPill Pty launched a pill container that, when opened, sends an SMS text message to a central server. The message is time stamped and can therefore be used by GPs to monitor patient compliance with medication regimes. The software supplied with the system has an alert function to bring non-compliance to the attention of the GP.

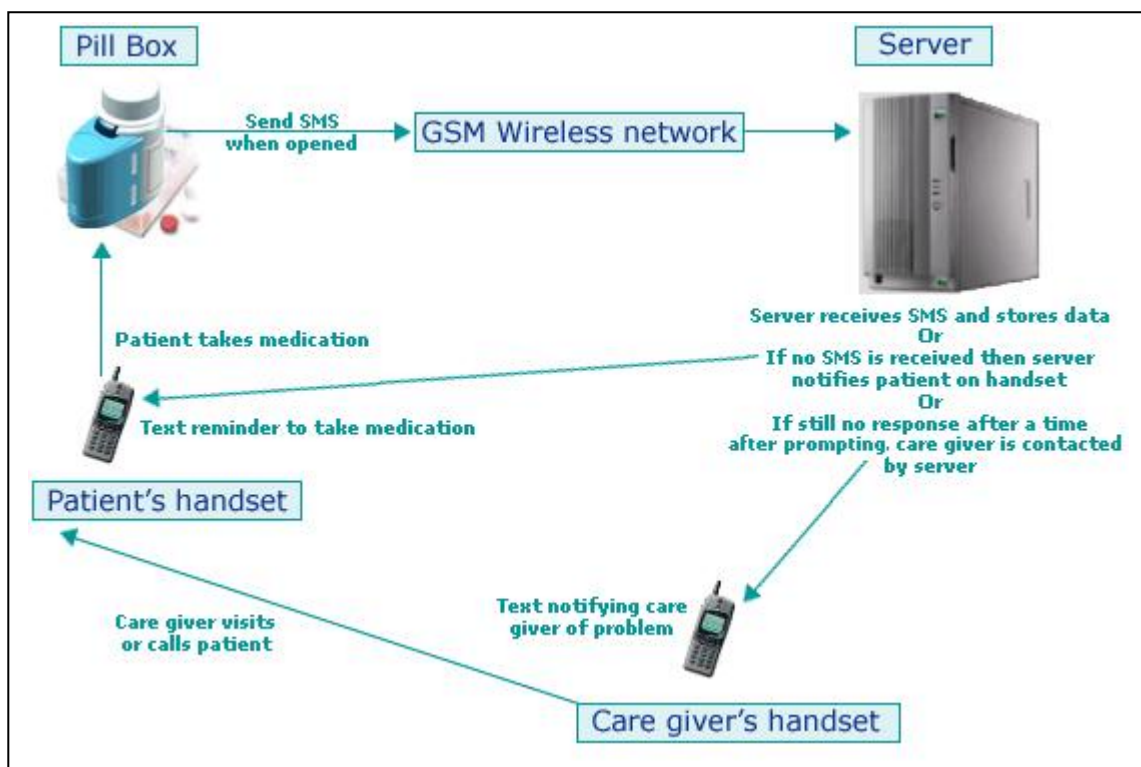
SIMPill is already active in the SMS PR market and has a messaging product called On-Cue. This product is marketed as both an appointment reminder system and a marketing tool to increase the number of private GP's consultations.

The GP licenses the dispenser system from SIMPill on a monthly basis (the licence includes 100 text messages per month).

SIMPill At A Glance

SIMPill is a South African-based company that has developed an SMS-based medicine dispenser to monitor and support compliance with medication regimes.

www.simpill.com



Analysis

SIMPill's SMS PR system has been designed as a marketing tool for GPs. However, the addition of the pill dispenser to manage compliance with medication regimes illustrates how SMS PR could evolve into a more comprehensive system. SIMPill's service could be used to manage several aspects of the relationship between the patient and the healthcare provider and could leave the specialist communications vendor strategically well placed within the healthcare IT market.

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