

Charity gets children well-connected

A growing number of young patients at Sheffield Children's Hospital will soon be able to keep up with schoolwork, access TV and other entertainment services, and telephone friends and family, all at no cost, following the installation of a sophisticated bedside patient entertainment/computing system supplied by Wandsworth Group. In a believed UK first, the equipment is being entirely funded by the hospital's charity. *Health Estate Journal* reports.

Part of the Sheffield Children's NHS Foundation Trust, Sheffield Children's Hospital opened in 1876 and has since been extended numerous times to accommodate additional child healthcare facilities. The hospital, still one of fewer than 10 specialist UK children's hospitals operating today, currently has around 130 beds. It provides many different children's services to patients not only from throughout Yorkshire, but equally from north Nottinghamshire, north Derbyshire and north-east Lincolnshire, including mental health, acute and long-term care, and day surgery.

Fundraising bears fruit

To co-ordinate fundraising for important projects not likely to attract NHS funding, the hospital has its own internal charity, Sheffield Children's Hospital Charity. Over the past two years, entirely via proactive initiatives such as a 10 kilometre race and black tie balls for the local business community, the charity has successfully raised well over £250,000 to enable the hospital to buy, rather than lease on a managed service basis (the more "conventional" route adopted by large UK acute hospitals), the first 100 of what it is hoped will be a complete hospital-wide system of Tele-Call bedside computing units from specialist supplier the Wandsworth Group, one for each of the 130 beds.

The plan, particularly apposite given the ongoing national introduction of hi-tech electronic data management and viewing systems like the NHS's PACS (picture archiving and communications) network, is for the Wandsworth terminals soon also to be able to offer clinicians at the hospital fast, efficient bedside access to patient records, data and scans.



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To date, as many will know, UK hospital patients have generally had to pay significant amounts for telephone calls made during their stay to friends and relatives. Those ringing patients from "the outside world", meanwhile, have often incurred even higher call charges, a situation that has attracted considerable controversy, particularly as the fees for both calls, and entertainment services, have spiralled (see article, *Health Estate Journal* – February 2008).

Patient entertainment system suppliers have generally defended the high call charges by arguing that, with many NHS hospitals failing to take up, and thus pay for, the sophisticated additional clinical features on which many maintain they built their business case (for instance those providing bedside access to patient records), the only way to recoup their substantial initial deployment costs has been to charge patients for phone calls and other services like Internet access.

This lack of anticipated take-up of "add-on" services has, some leading players claim, left them with no choice but to levy incoming call rates as high as 49p/min and also to charge, often via "credits" bought by the patient on a "card" on admission, for TV viewing by the hour or day, as well as for other services.

One of the other noticeable facets has been that some Trusts have been reluctant to sign up to "restrictive", long-term contracts with patient entertainment system suppliers. Sheffield Children's Hospital certainly took this view, but was nevertheless keen to offer telephone and TV services to its young patients.

Paul Knight, website and database co-ordinator at the Sheffield Children's Hospital Charity, explained to me during a recent visit that the charity had felt equipping all the wards with bedside computers would be a particularly worthwhile project even prior to the Government's announcement of its Patient Power initiative in summer 2000. (This stipulated that, as a target, all UK hospital patients should have access to their own bedside telephone and TV).

Trustees supportive

He explained: "We approached our trustees during late 2003/early 2004 with a proposal for a system of bedside computing/entertainment terminals, hoping the units could eventually also be used for clinical access to help offset the costs. The trustees were extremely supportive, but our initial estimates suggested we needed to raise at least £120,000 even to run a 23-bed single ward pilot, to cover the cost of terminals, new dedicated servers, the licensing requirements, and some strengthening of the ward's walls to accommodate

brackets etc. Fortunately we raised this sum quite easily thanks to local people's generosity."

Rather than engaging with a national Patient Power provider to install and run the service, the Trust and charity were convinced the best solution would be for the hospital to buy the equipment and manage the system itself.

Russell Banks, the Trust's head of IT, elaborates: "We explored using an externally managed system from several large, national suppliers. But, alongside cost issues, we found the contractual obligations often prohibitive. Some deals would have tied us in for up to 15 years. We wanted something that gave us the initial solution, but would then enable us to build on our existing infrastructure to take advantage of the changing needs of the service and technology, to provide a high quality, cost-effective telephone, 'web' and TV bedside service that could be managed as part of the hospital's internal IT and telecoms infrastructure and used by both children and staff."

The IT manager says that, while his team had been keen to get a bedside computing/entertainment system off the ground for some time, the project "could never have progressed so far and so quickly without the charity's substantial fundraising efforts".

Over £250,000 already raised

To date the charity has raised over £250,000 for this "special project", and it is hoped and intended that ongoing fundraising will see the expansion of the terminal network from a current 23 unit pilot system in the S3 orthopaedic ward to nearly 100 beds this year, and to all 130 or so beds, as well as to selected clinical and waiting areas, within the next two years.

"While we previously had some video services across the hospital's patient network, and wards equipped with wall-mounted CRT television sets, we were very enthusiastic about providing each bed with its own patient information terminal," says Russell Banks.

Patient security paramount

One particularly important element was maintaining the security of the young users of the telephone and ancillary services while still allowing them to communicate freely with family and friends. Russell Banks says: "The Trust was keen both for young patients to have free access to the phone, and for 'appropriate individuals', such as parents or teachers, to be able to contact children via their own direct telephone extension, all without placing an additional burden on nursing staff."

"One of our foremost concerns, though, was ensuring that individual patients (the hospital generally treats youngsters up to 16 years old) were not called up by



A young patient and her parents enjoy watching a children's programme on a Wandsworth monitor screen.

inappropriate or unauthorised individuals who had somehow obtained their direct extension number."

To provide the best possible safeguard, Russell Banks explains that the "soft" IP handsets incorporated on each terminal, and indeed the Tele-Call terminals themselves, are linked to the hospital's QSM clinical discharge system. On each patient's admission a nurse allocates the youngster to a bed, inputting their records etc to the system and, at that point, the QSM system generates their own PIN number, which any individual calling them from outside the hospital will be asked for by an automated voice system when they dial in.

Russell Banks adds: "We added a Cisco IP telephony system to our telephone network three years ago, which enables anyone equipped with one of about 450 Cisco IP phones to make a wide range of calls using IP telephony. To operate the phones, and link them to our analogue telephone system, we have been using two Cisco CallManager servers and, with the plan being to deploy Wandsworth

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bedside terminals incorporating Cisco IP "soft" phone handsets (all dialling is undertaken on the terminal touchscreen) to all the beds over the coming months, we have just added a third CallManager.

"This combination will enable us to link the patient handsets, and our existing analogue and Cisco IP telephones, into one integrated VoIP system."

Russell Banks explained that, once an individual patient is allocated a bed by the hospital's clinical discharge system (which uses terminals on the wards accessed by nursing staff), the Cisco IP telephone system uses "scripts" specially written by systems integrator ANS Group (with whom the Trust has already worked on several projects, including the installation and management of its Novell and Cisco communications platform) to "interrogate" the QSM system for a PIN number, which is then made available in the Cisco CallManager application.

PIN security system

Those likely to want to call the young patient are then given this PIN number, and, by ringing in and answering several security questions, and using the PIN, can then get through to the youngster direct. Should an external caller get any answers wrong, their call will divert to the



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main switchboard as a failsafe while, should they provide the "wrong" data once the call is through to ward level (for instance by giving the wrong PIN), the call will re-route to the nearest nurse station.

While the first 23 Wandsworth Tele-Call behead computer units were installed, and have been providing, TV and other entertainment services, with excellent patient and staff feedback, since last November, the bedside telephone service using the IP phones has only just "gone live".

Russell Banks explains: "Since the terminals' installation on the S3 ward (which mainly treats orthopaedic patients) late last year, the youngsters there have enjoyed up to 40 Sky and Freeview TV channels, radio, DVD and video. In future we plan extending the terminals' use for educational content, so children who may be in hospital for several months can still undertake schoolwork, in conjunction with the teachers the hospital employs, and thus not get behind their peers.

"They should soon either be able to watch and interact with DVD and video-based educational content at the bedside using their terminal, with the teacher either working with them remotely from one of the hospital's classrooms or from another location or, if well enough, be able to do the same in one of the actual classrooms. Integral webcam modules in the Wandsworth terminals will assist teachers to monitor students' 'understanding' remotely. Feedback about the TV and other services already provided, from the young patients, nursing staff, and from the team of 'Play' specialists who co-ordinate learning, play and entertainment activities on the wards, has been extremely positive."

Parents 'amazed'

Catherine Ingle, a Play specialist, whose remit includes the S3 ward, told me: "Parents have not only been enthusiastic



Catherine Ingle, a hospital "Play" specialist, says: "Parents have not only been enthusiastic about the TV and other services; they have also been delighted, and amazed, that children are not currently charged."



Wandsworth Group's Peter Dunning demonstrates how easy the touchscreens are to use.

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Russell Banks explains that, to ensure the hospital "does not run up huge bills for telephone calls", an initial month-long trial will evaluate the level of usage and typical call lengths made etc. He adds: "Initially young patients will be able to make any conventional landline call free, but will not be able to call mobile telephones. Those calling from outside will also only be charged the normal telephone tariff set by their service provider (rather than incurring the 49p/min charge some Patient Power system providers currently levy). This means youngsters and their parents should be able to keep in touch economically; we believe we are the UK's first hospital to establish such a low-cost telephony system for young patients."

While Sheffield Children's Hospital enjoys preferential call rates for outgoing calls, Russell Banks acknowledges that careful initial monitoring of the number and length of calls made will be important "to prevent any possibility of abuse". He says: "If we find call lengths etc are excessive we may have to consider some form of capping the number of call minutes available on the phones, but we hope that, with sensible use by children, and the hospital charity's ongoing financial support, we will not have to do this."

The Wandsworth software incorporated into the Tele-Call units will record data on each call, including its duration and "destination", giving the IT team a clear indication of the cost of the calls being incurred, and could, in future, enable charging if it was ever required subsequently.

Full roll-out planned

It is planned that the next areas to be equipped (shortly) with the Tele-Call terminals will be the hospital's M3 oncology ward, and a new clinical research facility, the latter also funded by the charity's fund-raising efforts. "After that," says Russell Banks, "the aim will

be to gradually roll out the terminals to all 130 beds as fast as funds, bed availability, and resources allow.

"We will also be looking soon to have a number of terminals providing clinicians with bedside data such as patient records; the first areas likely to see such deployment are the ITU, high dependency and neo-natal units. All the evidence suggests significant staff time and resource can be saved by enabling clinicians and nurses to view and access records, scans and medical history etc at the bedside. We are also busy converting our large library of patient information leaflets into a format whereby they can be accessed directly on the bedside terminals to better inform parents and patients and reduce our costs."

The plan is for the terminals to be set up to "switch" from, say, showing a TV programme or video to showing clinical images when an authorised staff member, such as a consultant, inserts their NHS smartcard.

Peter Dunning, product manager, Tele-Call & Tele-Point at Wandsworth Group, who accompanied me on the visit to the hospital, believes the company was selected for the project not only for its considerable patient information/entertainment system expertise, but equally because the hospital, and its IT department particularly, "had complete confidence in the Wandsworth hardware and software and knew we (Wandsworth) would have no problem with the IT team 'getting inside' the system whenever they wanted to and adapting it to their requirements".

He adds: "This project has been a tremendous team effort; everyone involved has shown tremendous commitment."

Confidence in supplier abilities

Russell Banks adds: "We are very confident in the abilities and quality of the Tele-Call terminals but, should we require it, have the added reassurance of knowing that ANS Group and Wandsworth experts are on hand to offer any additional technical support.

"The children in the pilot S3 ward absolutely love the TV and other entertainment services," he adds. "Alongside offering telephone calls, we will soon be introducing more learning programmes to ensure children get a really good balance between entertainment and education.

The Wandsworth IP-based bedside terminals each feature a wall-mounted, high specification, fanless touchscreen PC, providing digital TV and radio, telephony, Internet access and interactive films. As is the case at Sheffield Children's Hospital, they are designed, as standard, to integrate into a hospital's IT system to provide clinical staff with secure access to patient data at point-of-care.

The major system elements are central head-end and bedside equipment, along with application software. Head-end components typically include application and content servers and appliances to manage the streaming of TV, radio and video-on-demand as TCP/IP "packets" over the hospital LAN. Wandsworth normally provides application software for the provision and management of the patient information services, including billing software while, at the bedside, a swivel-mounted arm is typically wall-mounted above each bed supporting a 17 in touchscreen terminal. The terminals themselves feature an integral, fanless motherboard and optional telephone handset. The screen can be positioned either for patient and visitor or hospital staff use.

The 17 in screen configuration is optimised to provide the high resolution (1,280 x 1,024 pixels) required for medical images and touchscreen applications, and can also handle widescreen TV and movies.

Cisco says: "Due to the high bandwidth requirements for video delivery, it is essential that the IP network infrastructure supports multicast, Quality of Service (QoS) and virtual LANs. Industry-leading security features are also a requirement to ensure that life-critical medical applications can co-exist with patient entertainment services without risk. Fortunately, Sheffield Children's Hospital had already invested in a Cisco "medical grade" network, which enabled the deployment of the Wandsworth equipment with only a small amount of re-configuration."

Each Tele-Call terminal is supplied with an integral smartcard reader, used for



A wide choice of TV and radio programmes is already available on the bedside systems; they will soon also offer education content.

secure access to the hospital's IM&T systems using (e.g.) NHS smartcards. The terminal can also be Bluetooth-enabled, while the smartcards themselves can be used in conjunction with PIN numbers/passwords or optional biometric or passive RFID readers to allow use of multiple authentication procedures.

Wandsworth adds: "Each terminal features no hard edges or crevices where germs can be missed during wiping, facilitating effective cleaning, while the fanless motherboard design not only makes the units extremely quiet in use but, by not requiring ventilation slots, also prevents dirt and germs getting, or indeed being harboured, inside."

The terminals also include features such as call alert technology implemented using LEDs; the only sound output is via attached headphones, an optional telephone or mini loudspeakers. Optional accessories include a telephone handset, Bluetooth



The CRT televisions fitted to many wards will gradually be replaced with the new 17 in Wandsworth screens.

and WiFi enablement, barcode and biometric readers, and a magstripe card reader.

Wandsworth can provide a variety of different terminal swivel arms; for instance fixed horizontal arms are suitable for solid walls, while the alternative, "scissor" arm is better suited to partitions or other light-duty walling or screens.

Head-end design service

The bedside computing specialist provides a head-end design service tailored to each hospital, with the head-end equipment comprising a combination of IPTV servers, content, and application servers. Wandsworth has also developed what it claims is the first full TCP/IP-based nurse call system (IPiN), to complement and integrate with the Tele-Call system, providing what it says is "one of the most powerful bedhead packages in the world".

