EXTENDING THE REACH OF CARE

How VGo robotic telepresence can make a profound impact on healthcare by:

- Boosting productivity
- Increasing revenues
- Improving clinical outcomes
- Raising patient satisfaction
- Enhancing a provider’s image

“When you can’t be there, VGo there!”
EXTENDING THE REACH OF CARE

“With VGo, I can offer an expanded set of services while also lowering the cost of healthcare delivery.”

– G.P., Director, Technology Assessment & Integration, nationwide Hospital-HMO network

Abstract

At the forefront of an emerging area of telemedicine, VGo enables healthcare professionals such as physicians, nurses and clinical specialists, and also patients and family members, to be in two places at once. VGo is now in early deployments in multiple hospitals across the US, as they seek to leverage this technology to increase productivity, improve clinical outcomes and boost patient satisfaction. Applications in use or under evaluation include:

- rounds from home or office,
- visits to senior care facilities,
- interpreter services,
- long-stay pediatrics and
- consultations in rural hospitals,
- rapid second opinions,
- medical training,
- family visits.

As the leader of a second generation of robotic telepresence solutions, VGo brings dramatic improvements in performance and functionality. And at a fraction of the cost of earlier devices, VGo facilitates the widespread deployment of robotic telepresence, and brings the opportunity to make a profound impact on the healthcare industry.

VGo is at the forefront of a new category of telemedicine technology that integrates videoconferencing, wireless networking and robotics to enable a healthcare professional to be (almost literally) in two places at once. VGo itself is a 4-foot high robotic appliance with integrated camera, screen and audio system that can be driven and operated from any Internet-connected computer.

With VGo, a healthcare professional can visit a patient in a distant location, such as a satellite hospital, a rural clinic or rehab facility, or just a room on the far side of the campus, without having to physically go there. While visiting the remote location, they can move around autonomously, seeing, hearing and speaking as they go – just as if they were there in person.

By eliminating the task of physically getting to the patient, VGo increases the amount of time that can be spent with the patient, and can enable providers to deliver a variety of services at much lower costs. It is well suited for conditions where visual observation is a vital element of the diagnosis: neurology, stroke care, dermatology, wound care, psychiatry and many others. Since the user is able to move around and direct the camera autonomously, there is no need to depend on giving instructions to an attendant. And because the patient experience is close to that of an in-person visit, a VGo consultation brings levels of patient reassurance and satisfaction that are close to an in-person visit.

For all the advances in medical technology, the single most important element in patient care continues to be the skills and experience of highly trained healthcare professionals: physicians, nurses and clinical specialists. Study after study has demonstrated that more time spent by these professionals interacting with patients translates into measurable improvements in outcomes, often accompanied by shorter hospital stays, reduced admission rates and other benefits. Now with VGo, the “face time” between healthcare professionals and their patients can be increased economically, and all of these benefits can be realized.
Patients and family members can also take advantage of VGo to be in two places at once. A distant family member can now visit a loved one without traveling, and a quarantined patient no longer has to remain in isolation from their family. And hospital-bound (or home-bound) kids can attend school, or visit and interact with other kids that are in a similar condition. Keeping the patient stimulated, engaged and in the regular company of loved ones can play a major role in improving outcomes.

This emerging category of systems that integrate videoconferencing, wireless communications and robotics is known as “robotic telepresence.” A first generation of robotic telepresence has been deployed in small numbers in the last few years, and the fundamental value has been demonstrated in a variety of applications. Now VGo brings dramatic improvements in performance and functionality in a tightly integrated and ergonomically designed package. And at a fraction of the cost of earlier devices – less than $6,000 each – VGo will for the first time enable robotic telepresence to be widely deployed within hospitals and other healthcare facilities.

**COMPARISON WITH CONVENTIONAL TELEMEDICINE**

VGo robotic telepresence builds on other forms of video technology that are already in use in clinical environments, but brings important advantages. This can be seen by comparing VGo with the two most widely deployed categories of telemedicine systems, fixed video systems, and video carts.

Fixed video systems provide for audio-visual communications between a physician and a remote patient, and can provide a useful aid to diagnosis and therapy, especially for where the patient is fully mobile. However, there are important limitations, of which the most important is that the location of the camera and screen is fixed.

<table>
<thead>
<tr>
<th>VGo</th>
<th>Fixed Video</th>
<th>Video Carts</th>
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</thead>
<tbody>
<tr>
<td>Autonomous operation</td>
<td>Static – can’t go to patient</td>
<td>Mobil but needs attendant</td>
</tr>
<tr>
<td>Most mobile</td>
<td>Constrained point-of-view</td>
<td>Clunky</td>
</tr>
<tr>
<td>Low cost</td>
<td>Furthest from “in-person”</td>
<td>Expensive</td>
</tr>
<tr>
<td>Near “in-person” experience</td>
<td>Expensive</td>
<td>Battery Challenged</td>
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</tbody>
</table>

Because of their inherent lack of mobility, fixed video systems are not even an option for many applications such as doing rounds, or for any application that involves meeting with multiple patients in their individual hospital rooms. Also, while the health professional can see the patient, they have a very limited ability to examine them, since the camera in a fixed, and therefore provides a very constrained point-of-view. From the patient’s standpoint, fixed video is also a much less satisfying experience, since they are talking to a screen on the wall, rather than a mobile physical representation of the physician, nurse or specialist.
Video Carts

“Video carts are simply not a good solution because someone has to push them around. Also, battery power is a big problem.”
— R.R., Director of Telemedicine, leading teaching hospital, California

By combining multiple components on a wheeled platform, video carts overcome the fixed location limitation of fixed video systems. However, with video carts the visitor is not autonomous: they are completely dependent on an assistant to move the cart to the location where it is needed, and to move it into the exact position to achieve the desired point-of-view. Video carts differ in how much control the remote individual has over the camera, but some degree of local help is always needed.

Because they are a collection of components designed for other purposes, video carts are inherently big and clunky, and provide a less personal interaction. For the same reason they are also considerably more expensive than VGo, and for this reason, fewer of them can be deployed, so they have to be moved further for each use. Most video carts also have power problems because some of their constituent parts are not designed for battery power. The result is either that they need to be plugged in to a wall outlet, or that they rely on heavy and expensive batteries and transformers.

What About Skype? Or FaceTime?

People often ask Why not just get a laptop with Skype? That’s mobile.” (Or with FaceTime, the Apple equivalent?) It’s interesting that VGo users had often tried that previously but found that it didn’t really work. Here’s why.

A person always had to be available to carry the laptop and ensure that the camera was pointed correctly as required by the remote person. That sounds easy but invariably the remote person always found they weren’t where they wanted to be since its nearly impossible to have someone devoted 100% tending to the laptop. And having someone responsible was a burden and often costly. VGo doesn’t require any assistance.

Because the laptop running Skype is an open platform, more often than not someone had changed a setting or selected the wrong option or pressed the wrong key so it was never something that could be counted on working without a lot of attention by a trained specialist. VGo is a dedicated appliance so it’s always ready.

There is also another problem with Skype specific to a hospital setting - or rather a problem with the laptop used to run Skype. If a laptop is not under the vigilant care of a single individual, its small size and inherent mobility means it will almost certainly go missing. The alternative is to bolt the laptop to a cart, but then its camera is essentially fixed, and even with an attendant standing by (needed to push the cart around) the experience is very inflexible.

VGO APPLICATIONS

Hospitals are using or evaluating VGo robotic telepresence for a broad range of applications. The following are some examples of common use cases that provide an indication of the breadth of scenarios in which VGo can be deliver significant benefits.

Rounds From Home Or Office

“The initial experience was overall positive from both doctor’s and patient’s standpoint. The patient thought it was very cool.”
— R.S., CTO, community health system, Florida

Physicians typically conduct rounds for their hospitalized patients once daily. By using VGo they can also perform night and weekend visits from their home or office, often accompanying the nurse or resident who would otherwise visit on the patients. These additional visits have a clear benefit in improved patient and family satisfaction, which translates into enhanced recovery, better customer satisfaction scores for the hospital, and an enhanced reputation for the physician. Studies also indicate that additional visits by the physician can have a measurable financial impact by contributing to early patient discharge.
Rural Hospitals

“It works well for my patients that are in need of emergency attention for such conditions as shingles, acute infections and post-operative issues.”

— Dr. S.H., dermatologist, Florida

Many major metropolitan hospitals also provide specialist services to rural hospitals. However, the logistics associated with providing this care without telepresence can be daunting, with a physician forced to travel for several hours for a short period of consultations. With VGo, a physician can “be” at the rural satellite hospital – or at a rural clinic – without leaving his or her metropolitan or suburban office. Applications for VGo include increasing the number of rounds the visiting specialist can conduct “in person,” bringing much greater flexibility in scheduling appointments, and providing rapid availability of specialists in critical care situations. These cases are all focused on achieving improved clinical outcomes at a reasonable cost. VGo can also be used to interview candidates for surgical procedures in a rural hospital close to their home, thereby removing a barrier to them selecting the metro facility.

In many cases, services provided to patients in rural hospitals via telemedicine are reimbursable at the same rates as in-person services. These reimbursement provisions are contained in federal regulations for Medicare, and often also in state regulations for Medicaid and private insurance (35+ states have regulations providing for Medicaid reimbursement, and several states have private insurance mandates). With over 20% of the US population living in rural communities underserved by medical specialties, these are very important applications on a nationwide basis.

Senior Care

“It provides a great opportunity for physicians to remotely visit their patients at any time of the day or night and get an accurate read on their condition.”

— V.B., director of rehabilitation services, community hospital system, California

While the distances may be smaller than for rural hospitals, the same benefit of avoiding travel time often applies to senior care facilities, especially those that are not co-located with a hospital. Not only physicians, but also other specialists such as pharmacists, nutritionists and psychiatrists can leverage VGo to meet with residents, replacing at least a portion of their in-person visits. Even where regulations do not provide for reimbursement, the savings in time, cost and sheer inconvenience of travel can often offset the fees earned. And where services are provided under a flat-rate contract, VGo will pay for itself many times over by greatly reducing the cost of service provision.

Rapid Second Opinions

VGo can also be deployed to provide rapid access to a second opinion in specialties where seeing the patient is critical to the diagnosis. An example is wound care, which is of course a very frequent and widespread need. In this case, VGo is deployed in each area of the hospital where wound care is being carried out. If the wound care nurse encounters an unexpected condition, or if the patient has questions or concerns, a senior specialist or physician can use VGo to examine the patient and provide an instant second opinion. The benefits of using VGo in this application include improved outcomes and better patient satisfaction.

In-Home Post-Op Care

VGo is also being used to provide medical services in patient homes, initially for post-operative pediatric patients. When the patient returns home to their family after surgery, a VGo is included with the care package provided to the home. A variety of clinical specialists, including the surgeon, can use VGo to make very efficient house calls both on a scheduled basis, and on-demand if problems or questions arise. While it is anticipated that this use case will improve patient outcomes, the most important economic driver is to reduce readmission by addressing issues in the home. With many insurance plans moving to payment practices that penalize early readmission, the economic basis for VGo house calls is compelling.
Interpreter Services

Many healthcare providers are required to provide interpreter services for patients who are deaf or can’t speak English. VGo provides a much better medium for translation than the telephone because the translator can see the patient’s expression and body language as well as hear their words.

Video is of course required for remote American Sign Language interpretation. And remote interpretive services are a fraction of the cost of an in-person interpreter – and also instantaneously available. While a standard VGo provides an ideal communications medium for interpreter services, it will soon also be possible to take advantage of an integrated translation service that is being developed in conjunction with one of the major translation providers.

Medical Training

VGo is used in medical institutes as in their training programs to enable a remote instructor to supervise trainees in surgical techniques or lab procedures such as dissection. With VGo, the instructor can move around the lab just as if they are physically present, and see directly what each student is doing. Using VGo makes it easier for medical institutes to schedule prominent surgeons as instructors, providing an increased draw for their programs.

Long-Stay Pediatrics

Some children and teens spend weeks or months in hospital being treated for chronic conditions or recovering from complex procedures. Sometimes they have compromised immune systems and are effectively confined to their rooms. The resulting lack of stimulation and social interaction has a potential negative impact on their recovery. VGo provides a unique opportunity for the patient to escape the confines of their hospital room to attend school, or to hang out at other places where kids congregate.

A number of middle school and high school students have demonstrated the value of social interaction by using VGo to attend school from their hospital room, or from a home setting in which they are confined by a medical condition. Their lives are transformed by learning in a social setting, and by being able to walk the corridors with their friends. Hospitals are also considering locating VGo’s in games rooms and other communal facilities so that room-bound kids can interact with their peers. Hospital funding for this application may be justified by improved clinical outcomes, or in some cases VGo’s are funded by foundations or other charitable institutions.

Family Visits

“Patients are very excited about our new robots. The two-way communications brings patients and families together, which helps families better understand the care the patient is receiving. It helps patients feel closer to their loved ones.”

— L.B., VGo Program Manager, community hospital system, California

Visiting family members and friends is an important part of a patient’s recovery. Several hospitals are using VGo to enable flexible access for family members to visit maternity wards, post-op patient rooms, pediatric wards and assisted living facilities. VGo is even being used to enable a father serving with the US military overseas to be “present” for the birth of his new baby. The hospitals using VGo for family visits believe that it will play a direct and measurable role in patient outcomes, but the primary business justification in the near-term is to enhance the hospital’s image and reputation. In future, some hospitals anticipate that VGo’s for family visits may be funded in part by hospital foundations or “friend of the hospital” groups.
Return On Investment

“The business case [for VGo] is multifactoral. For a neurosurgeon with a potential patient in a satellite hospital, the goal is to secure a patient for surgery. In case of a nursing home, the goal may be to ensure a patient is not admitted to hospital unnecessarily.”

- Dr. W.V., Assistant Professor of Surgery, leading teaching hospital, Illinois

VGo is affordable: healthcare professionals can be driving around remote locations for less than $6,000. Given the strategic value of the individuals using VGo, the return is often self-evident. The following chart shows the multiple benefits that accrue from each of the sample applications discussed above.

<table>
<thead>
<tr>
<th>Application</th>
<th>Improved productivity</th>
<th>Increased revenues or reduced penalties</th>
<th>Improved clinical outcomes</th>
<th>Improved patient satisfaction</th>
<th>Legislative mandate</th>
<th>Enhanced hospital image</th>
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</thead>
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<tr>
<td>Rounds from home/office</td>
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<td>✓</td>
<td>✓</td>
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</tbody>
</table>

VGo UP CLOSE

“Because of its shape and its size, VGo isn’t intimidating to patients. We can walk it around the unit and patients and families easily interact with it.”

— V.B., Director of Rehabilitation Services, community hospital system, California

The VGo system has three main elements: the VGo Client App (PC App or Mac App) installed on the remote user’s computer, the VGo Robotic Telepresence Appliance, and VGoNet, the cloud-based network that enables VGos and VGo Clients Apps to communicate, and that enables user and device management.

To utilize VGo, a healthcare professional installs a VGo Client App on their computer. A list of VGos to which they have access is always up to date. From this app, they can select the VGo they want to connect to – provided they have the right access privileges. The Client App provides high quality two-way audio and video. And when the user positions their mouse pointer on the screen, driving controls appear. The user simply clicks the direction they want to drive, and the VGo moves in that direction. When they move the mouse pointer further, VGo accelerates.
The camera can look anywhere – up, down, all around. The user can move delicately around the confines of a patient room, move close in to get the best viewpoint for examination, or step back to observe the patient or to address family members or colleagues. They can slowly pan around the room or join a colleague walking down the hall. Users say that the single, most empowering part of using VGo is that they are autonomous in the remote location. The user can drive where he or she wants, look at what they want and communicate and collaborate with whomever they want – just as if they are there in person.

VGo itself is a light-weight, motorized, remote-controlled platform uniquely integrated with a camera, microphones, and video display. The appliance is optimized at 4 feet tall so it works equally well when interacting with people who are sitting or standing, and is also the ideal height to interact with a patient in bed. Battery power enables it to run for up to a full day between charges. When it’s time to recharge – just click the “Dock” button and VGo automatically positions itself on its charging dock (included). The appliance also includes sensors so it can’t be driven down stairs, and will recognize and warn the user of large objects such as walls and furniture, and also when it is reaching the edge of the Wi-Fi network. In addition to Wi-Fi, VGo also supports communications over 4G wireless networks, and is currently undergoing certification for Verizon Wireless 4G LTE service.

VGo is continually connected to VGoNet, a cloud network that keeps track of its availability and initiates a visit upon request by a remote user. VGoNet maintains a directory of VGos and users and provides for call control. VGoNet Manager is a web-based management utility that allows the designated administrator to control user and access privileges. Over time we expect that VGoNet will offer additional applications to extend the range of services, with the first to be offered being an integrated translation service that is being developed in conjunction with one of the major translation providers.
NEXT STEPS – SEEING IS BELIEVING

“This is definitely the future for my field. I just can’t be everywhere at once. And the costs are just continuing to increase. VGo is a great answer to the problem.”

— L.N., telecare health worker, New Hampshire

If you are responsible for investigating new telemedicine technologies for your institution, your next step is to get to know VGo and determine which application will bring the greatest benefit to your own institution. We are ready to help you deploy the system, and also to share what we have learned from our other hospital customers.

For a limited time, VGo is offering qualified purchasers a try and buy option: you can order up to four VGos to try in your environment for 30 days.

We are confident you will be amazed at what VGo can do for you. If for any reason they do not meet your need, simply return them with no obligation.

To order now, simply go to: http://www.vgocom.com/buy-now.

To learn more, we suggest to join one of our regular scheduled webinars where we can tell you more about how VGo works and answer your questions.

To register, visit: http://www.vgocom.com/attend-webinar.

Or to schedule a demo or request additional information, visit: http://www.vgocom.com/moreinfo

About VGo Communications

VGo Communications, Inc. develops and markets visual communications solutions for the workplace. The company was founded in 2007 by experienced successful veterans of visual communications and robotics industries. VGo Communications is VC backed and is based in Nashua, NH. We are leveraging the recent trends of widespread wireless high speed networks, lower specialized component costs and the universal acceptance of video as a communications medium to create a new market category called “Robotic Telepresence.”

VGo is sold and serviced by a set of top tier resellers experienced in delivering and supporting networked visual communication solutions.

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