

# CONNECTED DEVICE DATA NEEDED TO MAKE HOME CARE THE STANDARD

With home care on the increase as a result of the coronavirus pandemic, Andrei Yosef, PhD, Chief Executive Officer of Sorrel Medical, looks at the crucial role played by connected home care medical devices and the data they generate.

The coronavirus pandemic has shocked healthcare systems around the world. The immediate task of finding appropriate short- and long-term solutions for COVID-19 has put the pharmaceutical and drug delivery industry in the spotlight as companies race to develop, test, approve and manufacture both treatments and vaccines. However, to paraphrase Churchill, a crisis should not be wasted. The pandemic presents an opportunity for drug developers, medical device manufacturers and regulators alike to reconsider how we treat patients and where care can be improved.

One silver lining that has emerged from the current situation has been the growing awareness of home care and its benefits. The seeds of this shift had been planted long ago with an increase in technology-enabled mobile health solutions. Last year even saw major tech companies like Apple begin to publicly explore the role they can play in patient-centric healthcare outside the hospital setting.

However, COVID-19 may prove to be a watershed moment for home care. It has forced hospitals and healthcare services to adopt new practices in favour of keeping patients at home – either because of the resource strain incurred from the pandemic or because immunocompromised patients risk too much by going to hospital. In doing so, it is helping patients grow accustomed to – and even prefer – remote health solutions and gives medical professionals access to the technology required to treat patients from afar.

The crisis has also given us a much better sense of where home care falls short. A doctor can listen to a parent describing a baby's symptoms but, without advanced connected devices, cannot check their ear to look for an infection from afar. They can give a patient a prescribed medicine but cannot track dosing and ensure adherence as they can in hospital. More complicated treatments such as chemotherapy are also problematic away from the watchful eyes of

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clinicians due to sensitivities in dosing and administration – and the harsh side effects of many of these treatments.

Innovation addressing these and other gaps could help us reap the benefits that home care provides to patients while also reducing the burden on hospitals. The key to that innovation is connectivity that both produces and communicates data to healthcare professionals, allowing us to understand home care more thoroughly and with greater transparency than our current capabilities allow.

## THE TROUBLE WITH HOME CARE DATA

A significant advantage to hospital care compared with current home care is in the data collection possible in a hospital environment. In a hospital, a doctor knows exactly how a patient's care is progressing. All details are recorded in an electronic health record (EHR), infusions are recorded by infusion systems – which are often integrated with the EHR – and machines are constantly monitoring vital signs. Hospitals, therefore, are perfect for data collection due to the controlled environment and the many assessments that patients undergo (Figure 1).

At home, the situation is markedly different. Patients are left on their own, or with the support of a family member, creating questions of adherence and accuracy in self-reporting. Even when the patient



**Dr Andrei Yosef**  
Chief Executive Officer  
T: +972 73 238 8859  
E: andrei.yosef@sorrelmedical.com

**Sorrel Medical**  
29 Yad Harutsim Street  
PO Box 8639  
Netanya 4250529  
Israel

[www.sorrelmedical.com](http://www.sorrelmedical.com)

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is supported by a home care agency or a professional care giver, interoperability and reporting issues create gaps in the transition of data from the home to the hospital. For doctors, this becomes a treatment challenge, and for healthcare systems it slows the transition to home care environments.

As such, patients remain in the hospital for extended periods due to the need for continuous monitoring of treatment – or move to less-than-ideal home care settings, in which clinicians are often left in the dark regarding the patient’s status and compliance with treatment. While the coronavirus pandemic has brought the need for home care to the fore, we must now overcome the opacity of the current home care reality.



Figure 1: Hospitals are ideal for gathering and analysing real-time patient data for clinical decision support.

### CONNECTED DEVICES ARE KEY

Point-of-care EHRs serve as a positive example of what can be done with increased data. A 2014 study<sup>1</sup> showed that the implementation of point-of-care EHRs helped to decrease the number of days to make Medicare claims, and increased clinician productivity. Furthermore, it helped clinicians “in their provision of

home care and communication among team members”. The point-of-care EHRs were able to collect and organise data that were consistently being produced in a way that allowed for it to become actionable.

That model can be used for other aspects of home care. For instance, home infusion is currently wandering a data desert. Most studies on home infusion are retroactive and rely on patient self-reporting. It is therefore very difficult to design new home-infusion products that truly meet patient needs (Figure 2).

With more data, key questions that drive innovation could be addressed. These include rates of adherence for infusion solutions; whether demographic factors such as age influence patient adherence; whether types of devices or drugs affect adherence; and whether caregiver or family involvement increases adherence.

### HOME CARE DATA ACCESS AND IMPLICATIONS

Garnering the data on the above-mentioned parameters can impact how willing insurance companies are to support home care, the design of new drug delivery devices and which patients can be sent home for treatment. The accumulated data we amass over time could help determine whether a patient should go home for chemotherapy treatment or whether they should remain in hospital where, on one hand, they can be kept under closer supervision but, on the other, they are at greater risk of hospital-related complications.



Figure 2: Connecting home infusion can help garner the data needed for improved home care focused technology innovation.

Beyond innovation, increased data can streamline home care standard operating procedures. As we move to a greater reliance on outpatient care, we simultaneously create an increased need for house calls to deal with various patient safety situations that may come up over the course of treatment. These calls are expensive and time consuming. With more data streaming from a patient's home to the hospital or pharmacy in real time, clinicians can more easily assess what the patient needs remotely – and intervene only when necessary.

Substantial gaps in our knowledge of home care have real policy implications as well. Many governmental analyses are based on studies that only look at narrow aspects of home care and fail to account for private households.<sup>2</sup> Consequently, legislators are left in the dark as to how best to support home care. This has also meant that more recent home care reimbursement policies from the Centers for Medicare & Medicaid Services have fallen short of industry expectations – and infusion industry organisations and their related patient advocacy groups are pushing for governmental bodies to revisit these policies. By collecting data on compliance and patient outcomes, we can also better support legislators in developing policies that adequately meet the needs of both providers and patients.

### THE PATH FORWARD

Fortunately, we do not need to invent new technology to begin addressing home care challenges. To develop better medical solutions that serve patients in the home, we simply need to connect existing devices to the Internet of Medical Things. With an increased data flow, we can understand key aspects of patient behaviour in ways that were previously impossible. This connection does not need to be incorporated into existing EHRs, which already face challenges of interoperability. If application programming interfaces are open, different types of

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analyses and integrations with existing medical data can be achieved.

After accumulating data over time, today's connected devices can be further customised to address the different patient challenges that will be discovered. Materials can be developed for patient groups that need specialised training for certain treatments – and doctors can have a better sense of who should be sent home and who needs to stay in hospital. It would open up new possibilities for home care, with all its associated benefits.

### CONCLUSION

The global pandemic has put the concept of home care on the minds of not only the medical community but also many patients and non-medical professionals. This moment should be used to push for more data-focused home care solutions. By connecting our home care medical devices, we can improve patient outcomes, reduce

hospital costs and help doctors focus on their most critical patients. The future of health is home care and the way we get there is through connected home care devices.

### ABOUT THE COMPANY

Sorrel Medical is a medical device company focused on prefilled wearable injectors. Sorrel is one of three privately held companies operating under the Eitan Group, all in drug delivery devices, including Q Core Medical, Avoset Health and Sorrel Medical. The joint experience shared amongst Eitan Group's three companies includes commercialisation of drug delivery products across the continuum of care, multiple US FDA approvals, market presence in over 20 countries worldwide, and a team of R&D innovators that are experts in parenteral drug delivery.

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### ABOUT THE AUTHOR

**Andrei Yosef** is Chief Executive Officer of Sorrel Medical, an Eitan Group company focused on the development and manufacture of wearable drug delivery solutions for easy and efficient self-administration. He is a leading expert in drug delivery device technology and high-end development processes, having served in several executive positions at Q Core Medical – a leading developer of smart infusion systems for hospital and ambulatory care settings. Dr Yosef holds a PhD in Biomedical Engineering and an MA in Mechanical Engineering, both from the Technion – Israel Institute of Technology.

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