

## SleepLinkz

### Revolutionary Sleep Medicine Delivery Platform

#### History

The sleep industry remains fragmented with a variety of vendor software applications (both cloud and computer resident) and hardware devices that don't communicate or exchange data between one another. The result is the redundant input of information into many different programs and diagnostic devices often creating errors and loss of productivity. In addition there is no method to exchange relevant data fields between these programs and no real effort to link the applications together for a more efficient workflow environment.

This in turn creates a situation that makes tracking and reporting patient information, test results and therapy compliance difficult, time consuming and inefficient. As the health care industry moves towards the adoption of Accountable Care Organizations, it becomes apparent that applications with the ability to communicate and share data, resulting in better patient outcomes tracking and lower operating costs, will be in demand. The evolving sleep medicine field is in need of a consolidated platform that links together a number of key components providing a truly seamless workflow environment and an outcomes management program.

Over the last year Signature Sleep Services (dba Sleep960) has formed a consortium of vendors with products that are designed to identify patients with sleep disorders and then funnel them into a Sleep Medicine Delivery Platform called **SleepLinkz**. This platform consists of a network of sleep medicine applications, devices and services designed to manage the Complete Care Cycle of a patient from initial screening through testing, treatment, follow-up and outcomes. They share open Application Programming Interfaces (API) allowing seamless communication between individual components thus eliminating redundant data entry.

#### Defining the Elements

After considerable research, based on 20 years' experience in the sleep industry and feedback from hundreds of health care professionals, testing facilities and therapy providers, a master list of elements was defined that detailed each step a sleep disorder patient could face during the complete care cycle from screening to outcomes. It was determined there could be up to 50 individual "touch points" with exposure to 12 different software applications and devices, thus resulting in the redundant data entry of over 500 fields of information. Compounding the problem is that because most of these applications did not communicate with one another there was no easy way to collect valuable information used to monitor treatment and track patient outcomes.

Since the elements of this complete care cycle were provided by many different products from a number of vendors, it would be a formidable task to develop a single application with supporting devices that could service all the touch points. Therefore the best approach would be to form a consortium of vendors that could bring to the table their applications, devices and services for an overall team effort. Any pieces of the puzzle missing or not effective would be completed with custom applications specifically designed to fill in the gaps. The SleepLinkz platform was thus born with the mission to improve the patient's complete care cycle experience and at the same time eliminate redundant data entry, increase workflow efficiency, reduce overall workload and increase revenues.

## Generating Referrals

Arguably the most important factor in the success of any sleep testing organization is the ability to generate a constant flow of patient referrals. How many times have you spoken to any of your colleges that honestly stated that they don't need any more referrals? Traditional referral mining includes working the local medical community with a series of "lunch & learns" and maybe convincing the practices to encourage their patients to complete a paper questionnaire designed primarily for sleep apnea. Although these and other methods such as internet marketing and social networking have varying degrees of success, a far more effective way to generate sleep referrals is to use an electronic questionnaire that can be accessed by patients either at home or in the physician's office.

**SleepScreener**, which is the flagship product of the SleepLinkz platform, was developed specifically for this purpose. It is a web-based application that works on any internet connected device with a browser, such as Tablets and Smartphones, to screen patients for all the major sleep disorders & comorbidities and electronically refer them to designated sleep testing facilities. It can be accessed directly by patients from a mobile website, a medical practice website or from within a health care providers practice interfaced to their practice management system. This means that patients can complete the questionnaire before they visit the physician's office by accessing the mobile site from a hyperlink within an appointment email reminder or complete it in the physician's office while in the waiting lobby or exam room.

Although custom questionnaires can be added, the most impressive features of SleepScreener lie in the backend structure since it has the ability to manage multiple referring physicians and locations within the same organization. It also handles multiple health care providers linking

together primary care, dental sleep, sleep centers and HME providers allowing for cross referring among the groups. The application also tracks a number of filtered statistics such as completed questionnaires, referrals, procedures and mix of insurance payer's. SleepScreener has an open API allowing interfacing with other applications including practice management programs, hospital EMR/EHR systems and the other SleepLinkz applications and devices.

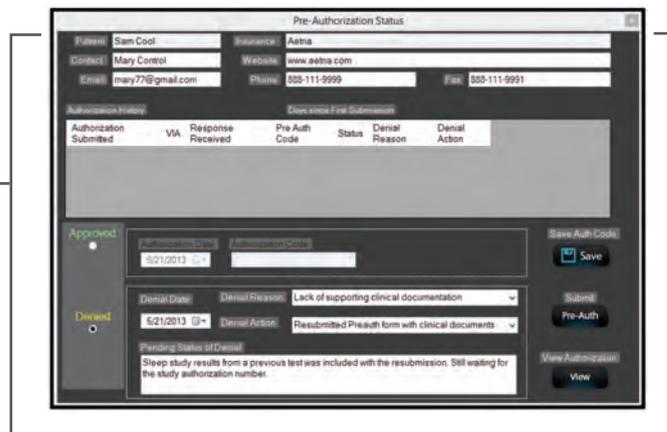


## Converting Appointments

Perhaps the most time consuming and frustrating element of this care cycle is dealing with the insurance payers, scheduling the patients and doing your best to make sure they actually show up for their appointments. Recent requirements from the majority of insurance companies to obtain study pre-authorizations have only complicated this process. During the planning phase no such application existed that could perform all these tasks within a single program. Thus, **ZConvert** was developed which provides all the functions required to import patient referrals directly from SleepScreener and “Convert” them when they arrive for their scheduled appointments.

It uses a sequential multi-step approach by taking patients from a waiting list and automatically verifying their insurance. Depending on the patient’s coverage policy it will auto-populate a sleep study digital pre-authorization form and then either electronically or paper fax it to the insurance payer. There is a database of digitized pre-authorization forms available from various insurance providers with the ability to add any form that is not already included. This process can be monitored and updated at any time using the pre-auth status window significantly reducing the work it takes to receive a study pre-authorization number.

The patient can also be scheduled using an interactive graphic calendar that has to ability to schedule any type of sleep procedure. Also included is a proven “Catch Fence Protocol” which guides the staff with a decision-tree of proven algorithms addressing the excuses patients use to non-commit or cancel sleep study appointments. Both patients and health care providers are automatically updated with progress email/text notifications and the conversion progress is continually updated with a multi-color bar graph called the ZLinkz Scale. A variety of tracking reports and graphic statistics are available including the most important “Referral to Conversion” ratio.



**ZConvert**

## Diagnostic Options

The next major element in the care cycle is the diagnostic pathway typically determined from a combination of the patient’s high risk indicators, comorbidities and insurance coverage. If home sleep testing is warranted then the patient’s information is imported from ZConvert into the ZWare HST management program. This vendor neutral package utilizes several of the industry leading HST devices allowing the units to be initialized, dispensed to the patient, record the study, upload it, then remotely score and interpret the results and provide an e-prescription for PAP or OA therapy. It can be used with small single site locations or quickly scaled up to work with large multi-site organizations.

If an in lab PSG study is required then the patient’s information can also be imported into **Galaxy** a full feature PSG system. This system incorporates a number of unique features making it very suitable for today’s marketplace at a reasonable price. The software is supplied on a Network Attached Storage (NAS) device providing 2 TB of storage which makes installation, updates, troubleshooting and remote access to the system easier. Standard features include past, present and future viewing, ICU type Dynamic Signal Window, integrated EMR, real custom reports and lifetime warranty amplifiers. Both the EMR and study



Galaxy

recording can be remotely accessed with a tablet so that reviewing and interpreting the results are simple and painless.

### Treatment Options

After the diagnostic elements are completed the next step in the care cycle is to seamlessly move the patient into the treatment phase using the e-prescription functions within ZWare or SleepScreener. This means that any health care provider using either of these applications can refer a patient along with all their relevant information on to a HME provider that is also using ZConvert. All the functions of insurance verification, therapy pre-authorization, scheduling, electronic notifications, workflow status, tracking and reporting can be completed within ZConvert.

When the patient arrives for their CPAP therapy session the HME staff can use another web based application called Manage My CPAP, which has automatically created a profile with their patient's imported demographic and insurance information. This application allows both the patient and HME provider to more effectively manage the CPAP therapy initiation and ongoing maintenance. Manage My CPAP also provides ongoing follow-up, therapy data tracking, video training, interactive support, and easy resupply ordering.

### Therapy Management

Even though the patient is closely monitored during the initial PAP treatment phase there are situations where additional therapy management is required. In these circumstances patients can now be referred to a new website known as CPAPCoach which provides both individual and group live virtual therapy sessions. Patients that are truly frustrated with their PAP therapy and ready to give up can now receive quality virtual face to face coaching sessions designed to help solve many of the common issues associated with adjusting to their masks and machines. The site also offers an information resource center and the ability for patients to book their own coaching sessions with an interactive web scheduling tool.

During the initial screening process, SleepScreener includes an insomnia index questionnaire which will identify individuals with varying levels of insomnia severity. If they score over a specific level then they are considered ideal for an internet therapy website called SleepTutor. It uses the well-established Somnio program which, when introduced in 2005, became the first commercially available Cognitive Behavior Therapy internet program utilizing a drug free approach to insomnia. The SleepTutor site allows health care providers to display their own personalized webpage so that patients feel they are still connected to their treating physicians. A digital library is provided with a wide variety of insomnia articles and related internet links. Plans are underway to offer patients the ability to record and monitor the status of their sleep patterns with a variety home monitoring devices and smartphone apps. Both SleepTutor and CPAPCoach can also send status updates of the patient's progress back to their health care professionals.



## Revenue Management

A critical element of the care cycle is to achieve the revenue necessary to make the overall operation successful. To this end, another group of applications from ZirMed medical billing and collection services was added to ensure the process of patient payments, claim management and analytics reporting would go as smooth as possible. Their suite of applications handles all aspects of the revenue cycle beginning in the front office where patient eligibility, allowable, payment and collection can be completed. The process continues with a claim's management suite that simplifies and manages the complex reimbursement procedure. This is complimented with both patient and payer payment suites that revolutionize the manner in which payments are managed from both patients and payers.

## Clinical Outcomes

One of the biggest assets the SleepLinkz platform provides is the ability to collect key parameters along the patient's care cycle and use them to generate a comprehensive Clinical Outcomes Report. Another application called ZOutcomes was developed to pull in a number of key metrics at specified time points from several of the platform applications over the space of a year. Beginning with the baseline marker, additional marker groups are collected, compared with the previous marker group finishing with the last marker group compared to the original baseline parameters. The results are then statistically analyzed in a chart format in addition to a number of graphic plots. This provides a detailed snapshot of the patient's response to treatment over time and a true indicator if their health and well-being has improved. It also delivers the added benefit of demonstrating the effectiveness of your patient management program to insurance payers.

## Support Services

No platform such as SleepLinkz would be complete without a number of support services. The Florida International Sleep School offers

Polysomnography and sleep medicine courses with a blended mix of on-line, on-demand and traditional classroom sessions. Platform vendor Modus Five supplies sleep medicine multi-media software including the introductory video that each patient views prior to starting the SleepScreener questionnaire. This has increased the likelihood it will be taken in a more serious fashion by educating the patient to the serious consequences of untreated sleep disorders. Proficient Health provides applications that convert paper faxing to an online process and the ability to consolidate disparate EMR's and management systems. Other support services include a Lab Accreditation Assistance Program (LAAP), sleep center management contracts and a variety of consultation services.

## Summary

Although the SleepLinkz platform offers a more efficient way to deliver a variety of sleep medicine services, it is still work in progress. When this article was written, we were in discussions with several additional vendors interested in joining the SleepLinkz platform. The mission is to continue to expand the platform and to that end, we encourage additional vendors which can provide sleep related applications and devices, to consider joining the consortium. It's important to note that many of these platform products presented here could interface with the majority of the applications and devices presently used in today's sleep industry.

Work will continue to increase the amount of information that can be transferred back and forth between products and the ability to track and monitor all the parameters required to display successful patient outcomes. What makes this platform unique is the ability to openly share information between a variety of disparate systems which truly saves time, increases patient flow, provides valuable outcomes statistics and increases overall revenues. Even so the real focus remains to improve the long term care of all sleep disorders patients and prepare for the sweeping changes the Accountable Care Act will ultimately bring.