



# NEPHROFLOW™ PRODUCT SUITE

PROCESS-DRIVEN DIALYSIS SOFTWARE





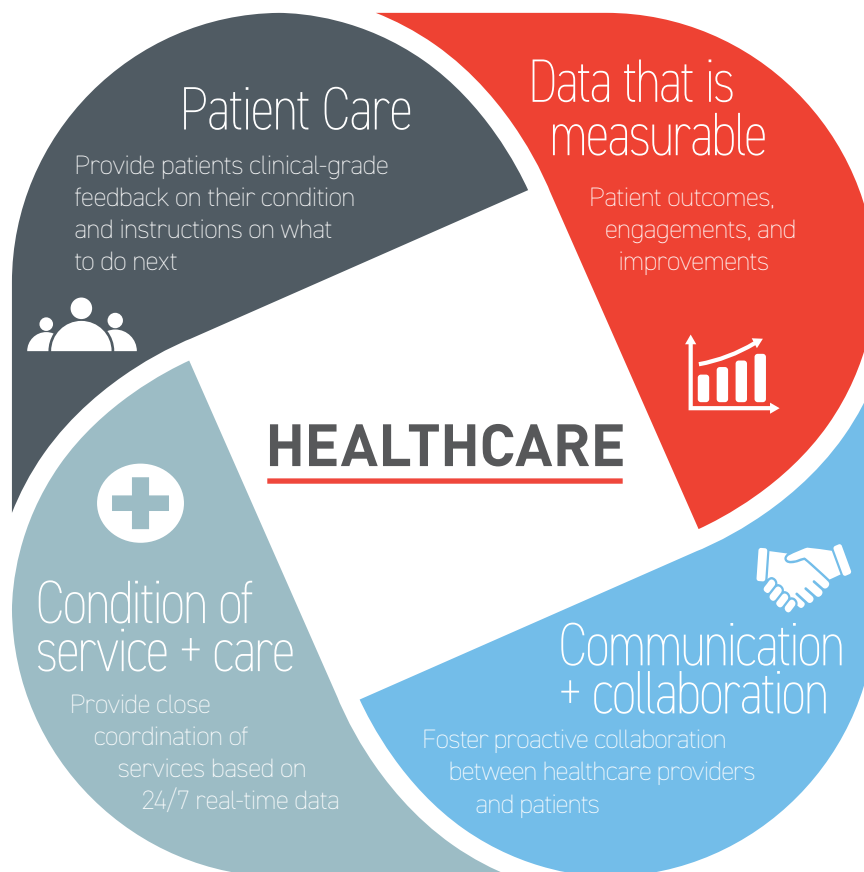
# NEPHROFLOW™ PRODUCT SUITE

PROCESS-DRIVEN DIALYSIS SOFTWARE

There is an increasing volume of policies and regulations in this present healthcare economy.\*

## How can healthcare providers differentiate themselves in an increasingly competitive market?

Many institutions are implementing systems to digitize their processes so they can understand and manage key performance indicators and quality metrics. Dialysis centers, whether embedded in hospitals or free-standing clinics, are no exception.



## Introducing a digital process-oriented management system that can help:

- streamline both your clinical and administrative operations
- vastly improve the communication between all healthcare providers

\*What is value in healthcare? Michael. E. Porter, N Engl J Med 2010; 363:2477-2481



# Common problems associated with data collection & processing

From idealized expectations to actual user experiences, from the quality of data collection to the efficacy and immediacy of data reporting – there are many potential “pain points” along the data chain.

Reliable data collection is necessary for proving the quality of delivered services and organizing administrative processes, but certain obstacles make it difficult to capture during daily care activities:

- **Growing expectations (do more with less)** are required of your staff, but the registration of data can be interpreted as burdensome and **may take valuable time away from patient care**
- **Electronic health records (EHR)** may be too generic, thus do not present a real added value because they **might not capture or analyze information in an effective way**
- **Data that is available in real-time** is essential for providing healthcare professionals with a complete picture, but **gaps in information could pose potential risks to the patient.**
- **Not all platforms are alike**, as some offer **a poor user experience with the potential to negatively impact the quality of documentation and/or frustrate the user** with an overload of dialog boxes and clicks<sup>1,2</sup>
- **Data collection should be integrated into workflows**, but entry is typically done as an afterthought, **which could lead to the loss of data and increased margins of error.**
- **Data processing should produce valuable insights** that are easily accessible, but translation of data into the documents necessary for external stakeholders (e.g. policy makers, professional associations, or the hospital’s billing department), **may require large-scale efforts, often times at an additional cost.**

To make matters more difficult, policies and regulations are narrowing down the number of options available to healthcare institutions as they try to organize these activities.

## THE SOLUTION?

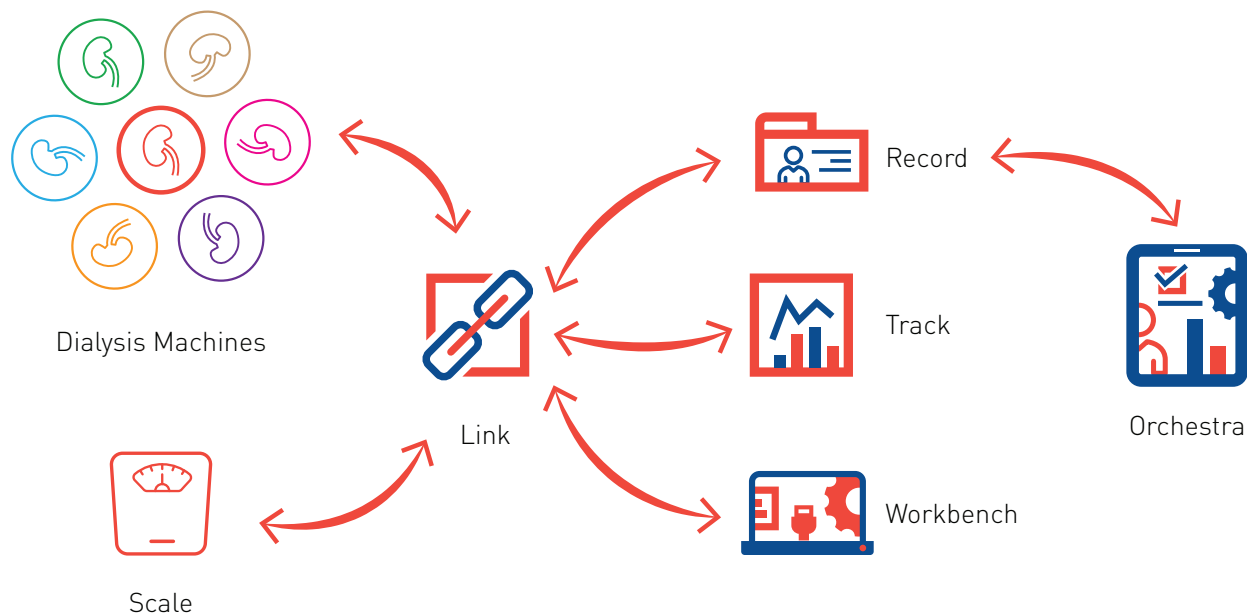
A software platform with an efficient user interface that makes data collection an easy and integral part of the daily workflow and continuously produces meaningful output almost automatically.

1. Collier R. Rethinking EHR interfaces to reduce click fatigue and physician burnout. CMAJ. 2018;190(33):E994-E995. doi:10.1503/cmaj.109-5644

2. Rodriguez Torres Y, Huang J, Mhlstin M, Juzych MS, Kromrei H, Hwang FS (2017) The effect of electronic health record software design on resident documentation and compliance with evidence-based medicine. PLoS ONE 12(9): e0185052. <https://doi.org/10.1371/journal.pone.0185052>

# Introducing the Nephroflow™ Solutions

The NephroFlow Product Suite offers a complete range of modules that can be configured to adapt to the needs of each dialysis unit.



## NephroFlow™ Link

provides connectivity with dialysis machines and other medical devices



## NephroFlow™ Track

enables near real-time follow-up of ongoing treatments



## NephroFlow™ ID

is an application for programming patient identification data to patient cards used on dialysis machines



## NephroFlow™ Record

offers a complete system to plan, prepare and follow up dialysis sessions



## NephroFlow™ Orchestra

allows a mobile workflow on top of NephroFlow Record



## NephroFlow™ Workbench

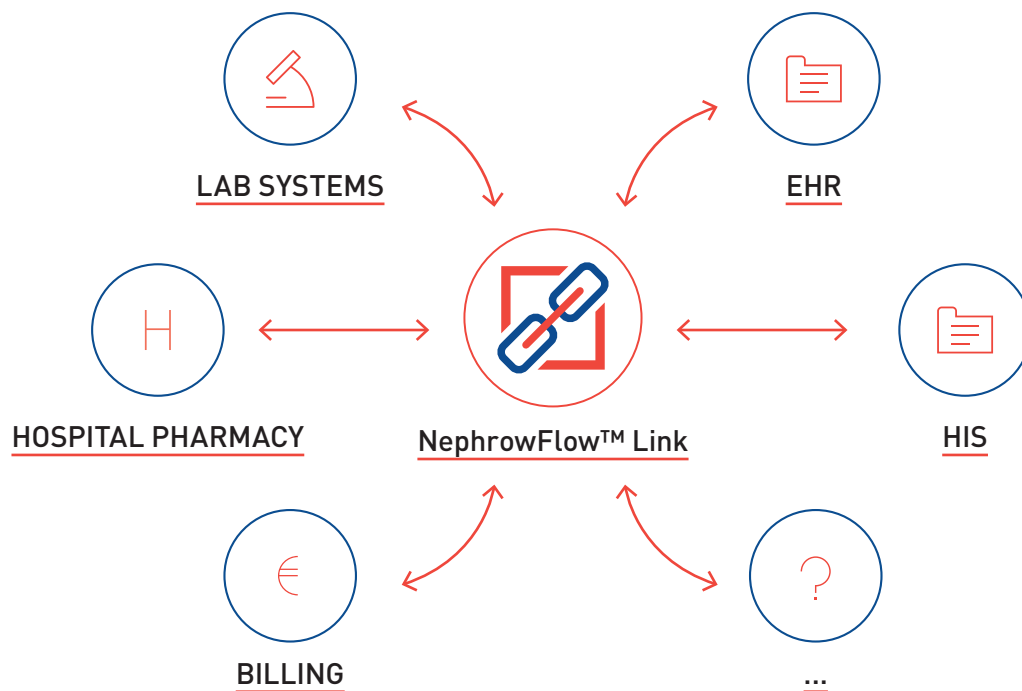
helps your dialysis technician to actively follow up the status of the medical devices installed in several dialysis units



# NephroFlow™ Link

NephroFlow Link offers network-based connectivity of dialysis machines, weighing scales, water treatment systems and other medical devices to:

- NephroFlow Track
- NephroFlow Record
- 3rd party Patient Data Management System (PDMS)
- 3rd party Electronic Medical records (EHR/EMR)



## Available for a wide range of dialysis machines:

Nipro Surdial X | Baxter Artis Physio | B.Braun Dialog+ and Dialog iQ | Fresenius 5008 and 6008 | Gambro AK200S | Medtronic Flexya | Nikkiso DBB-EXA

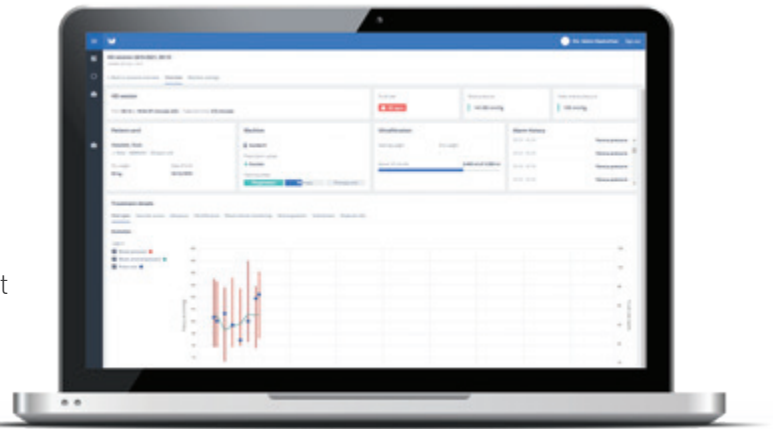
And other machines on request if needed.



# NephroFlow™ Track

NephroFlow Track offers nephrologists and nurses near real-time follow-up of:

- Ongoing and historic dialysis sessions
- Detailed parameters of each session
- Machine settings
- Pre- and post-dialysis weight
- List of device generated alarms during treatment



# NephroFlow™ Workbench

Allows your technician to do a multi-center remote follow-up of the installed water treatment systems and dialysis machines on:

- Performance data
- Alarm lists
- Disinfection logs







# NephroFlow™ ID

With NephroFlow ID, the NephroFlow Product Suite has an application to write and erase patient identification data to patient cards on both chip card as well as on RFID (Radio Frequency Identification) tags.

The RFID tag can be used to identify the patient on the scales when a scale is integrated in the patient data management system to send the weight of the patient to the database pre- and post-dialysis .

The application is available as a standalone application and is also integrated within NephroFlow Track.





# NephroFlow™ Record and



# NephroFlow™ Orchestra

Dialysis sessions require meticulous planning, execution, and follow-up. NephroFlow Record enables the easy capture and consultation of data immediately and in-hand, effectively eliminating the need for paper documentation.

Built together with end users, NephroFlow Record addresses your needs to digitize the dialysis workflow:

## 1. PREPARATION:

The nephrologist enters his/her orders in a clear and structured format.

## 2. EXECUTION:

Working with NephroFlow Record only, the end users can work with a printable prescription and a program book for preparation. On top of NephroFlow Record, NephroFlow Orchestra features a mobile app that allows you to work truly paperless.

The workflow on the app will provide the end user a dynamic step-by-step guidance throughout the treatment.

## 3. FOLLOW-UP:

After a session has been completed, summaries and comparisons with historical data are immediately made available. The nephrologist and nurse can consult the data to optimize the patient's therapy. This closed-loop feedback mechanism drives a quality-focused continuous process.

All data captured by nurses during treatment can take place immediately at the patient's bedside and can be followed-up remotely near real-time by nephrologists.

Nurses can also consult all relevant patient data from the medical records connected to the device and communicate important events to others, with minimal effort.





# Easy-to-use interface

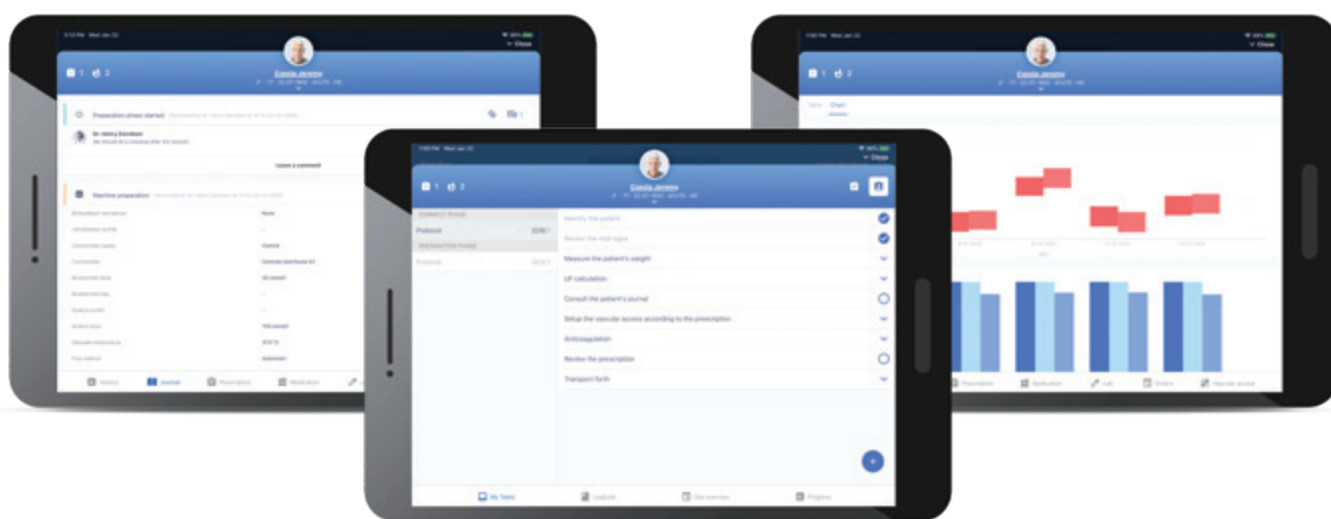
With Nipro's extensive expertise in renal care, we have long understood the important link between design and user experience. That is why the different modules of the NephroFlow Product Suite solutions are straightforward, consistent and aesthetically pleasing.

However, our primary consideration when designing the user experience of NephroFlow Track, Record and Orchestra is its smooth and practical use in daily operations.

## This means:

1. Only displaying the absolute relevant information at the right point in time
2. Reducing the number of clicks required to perform tasks that are executed often
3. Clear structure so nephrologists and nurses know where to input their observations and look for data

By instilling a design based on intuitive use, we provide a process-driven approach that helps reduce clutter, improve the user experience, and ensure the quality of data collection.



# Continuous design evaluation

A solid foundation for the user experience results in less training and has measurable positive results in terms of documentation quality.<sup>1</sup>

## To ensure that we always deliver a valued-added process, we:

- Developed a consistent set of branding and design guidelines that provide us with a basic framework for all user-facing development
- Perform acceptance tests with real users on a regular basis
- Continuously assess and optimize the application's performance using integrated monitoring and automated tests

<sup>1</sup> What is value in health care? Michael. E. Porter; N Engl J Med 2010; 363:2477-2481



## Why use Nephroflow™ Record and Orchestra?



### **SAVE TIME | Up to 45 minutes**

Reduction of manual and administrative time spent per patient per nurse per shift



### **MAKE FEWER ERRORS | 36%**

Improved patient safety regarding correct registration of administered medication



### **INCREASE NURSE SATISFACTION | 30%**

Increase in nurses' satisfaction regarding easy access to relevant patient data



### **REMAIN PATIENT-FOCUSED | 52%**

Reduction in administrative tasks getting in the way of patient care

# KEY FEATURES

## A state-of-the-art clinical information system

The medical records in NephroFlow Record and Orchestra are specifically tailored to the management of dialysis patients and treatments. The system features, among others, the following state-of-the-art medical record modules:

- Complete treatment records and summaries
- Intelligent dialysis prescriptions
- Drug prescriptions
- Planning of medical procedures
- Complete vascular access management
- Complete wound care management
- Fluid balance management
- Laboratory results viewer
- Clinical observations



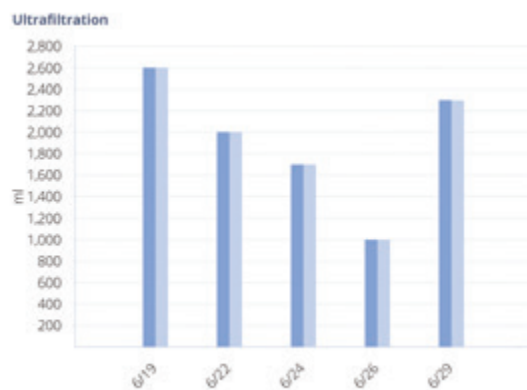
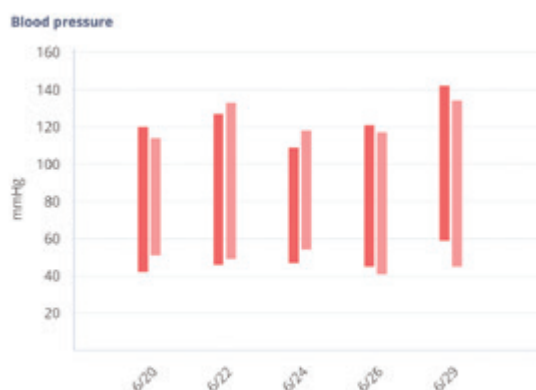
**One key differentiator is the fact that all modules, where appropriate, seamlessly interact with a mobile workflow component, NephroFlow Orchestra, which communicates the nephrologist's orders effectively to the nursing team without any additional effort.**

## Keeping quality in check

Given the continuous inflow of structured data, NephroFlow Record and Orchestra can assist nephrologists by charting key performance indicators, intelligent summaries, and highlight events that require attention.

The system further increases the quality of care by embedding the organization's best-practice care protocols in the mobile application to help ensure consistent and compliant delivery of care.

This also results in effective reporting to professional associations, participation in studies, and writing publications.





## An unobtrusive communication platform

NephroFlow Record offers several modules that aid in improving the communication between all healthcare providers within and between departments.

### Overview of dialysis sessions

This module provides a complete and near real-time overview of all ongoing sessions in the different dialysis rooms, including the ones in remote centers.

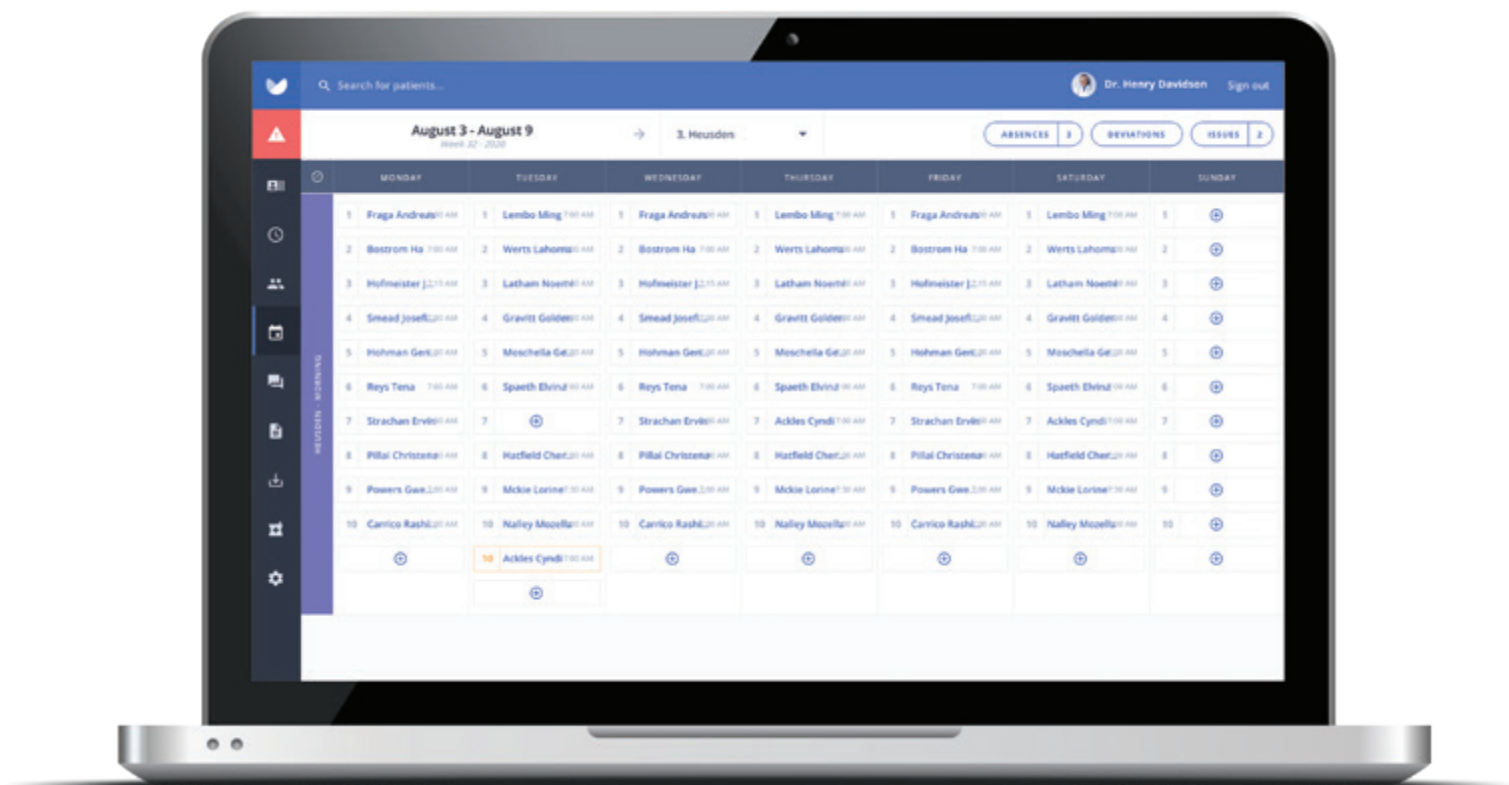
### Medical and nursing journals

NephroFlow Record features different kinds of journals where important events about the patient's care can be recorded and collaborated on. Adding items to a journal can be as easy as clicking one button on a previously recorded event. Simply choose which items you wish to share in the hospital's EHR system.

### Staff meetings

Easily prepare staff meetings by viewing all important events for a given period and select the ones you wish to discuss with your colleagues. Effortlessly mark meeting progress and pick up where you left off.





## A solution to reduce the administrative burden

### Planning engine

NephroFlow Record features an intuitive and innovative planning engine. It allows for the planning of patients with one or more recurrent schedules, while also supporting one-time exceptions and holiday periods.

The planning overview is equipped to show alerts when a patient does not have sufficient dialysis hours planned and will show relevant deviations and absences for a given period of time.

### Order management

Based on the aforementioned detailed planning, NephroFlow Record is able to generate several types of reports that can be used to order different materials as needed (e.g. medication, disposables). Note that reports can be generated both on consumption and as future projections.

### Reporting

Data collection is only the starting point. The structured data set facilitates the automatic generation of many different kinds of reports for supporting other processes. NephroFlow Record features, among others, reports for:

- Treatment logistics and preparation
- General practitioners
- Transport

### Billing

NephroFlow Record is capable of automatically generating both billing reports and exports based on previously recorded actions. Although an editor exists to review and alter billing records, it is possible to fully automate the billing process by integrating it within your existing billing systems.



# CLOUD SECURITY

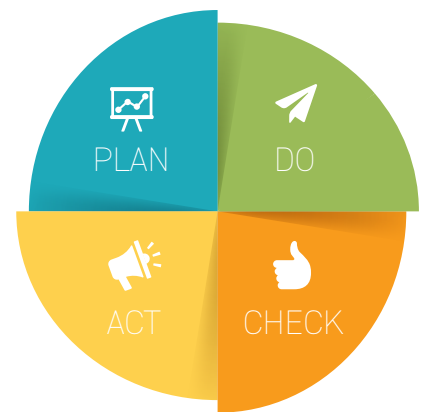
## Governance

Although no formal requirement exists, we implemented an information security management system (ISMS), given our responsibility to safely process patient data.

With the advent of the General Data Protection Regulation (GDPR), we also want to give a strong signal to our customers that we take privacy and security seriously. An ISMS, with its related policies, signals our serious commitment.

Key security controls were brought in place and we continuously invest in mitigating threats following the “Plan-Do-Check-Act” (PDCA) model.

As part of our procedures, we regularly perform both black and white box penetration tests of our cloud environment by a qualified independent party.



## Link

The cloud platform is set up using industry best practices in information security. The platform is continuously monitored and many threat mitigations have been implemented.

All components in NephroFlow Link feature encrypted communication using the TLS protocol and authenticate using short-lived tokens.

Moreover, the NephroFlow Link can pull integration tasks that need to be performed locally through a hospital firewall via long-polling. This allows us to efficiently and securely integrate our cloud platform with on-premise components (e.g. electronic health records, hospital information systems, laboratory information systems), all without asking the hospital to open any firewall ports or establish a VPN connection.

# TECHNICAL SPECIFICATIONS

## System requirements of NephroFlow's Applications

**NephroFlow Track and Record** work through a web application that is compatible with the 2 latest versions of all major browsers. Internet connection and a screen with a minimum resolution of 1280 x 1024 are required.

**NephroFlow Orchestra** is an Apple iPad application that requires iOS software version 12.0 or higher. A stable WiFi connection is required.

**NephroFlow Server**, only required for non-cloud installations, is a web server that requires 4 vCPUs, 150 GB disk storage, 32 GB of RAM memory, and connection to the internet.

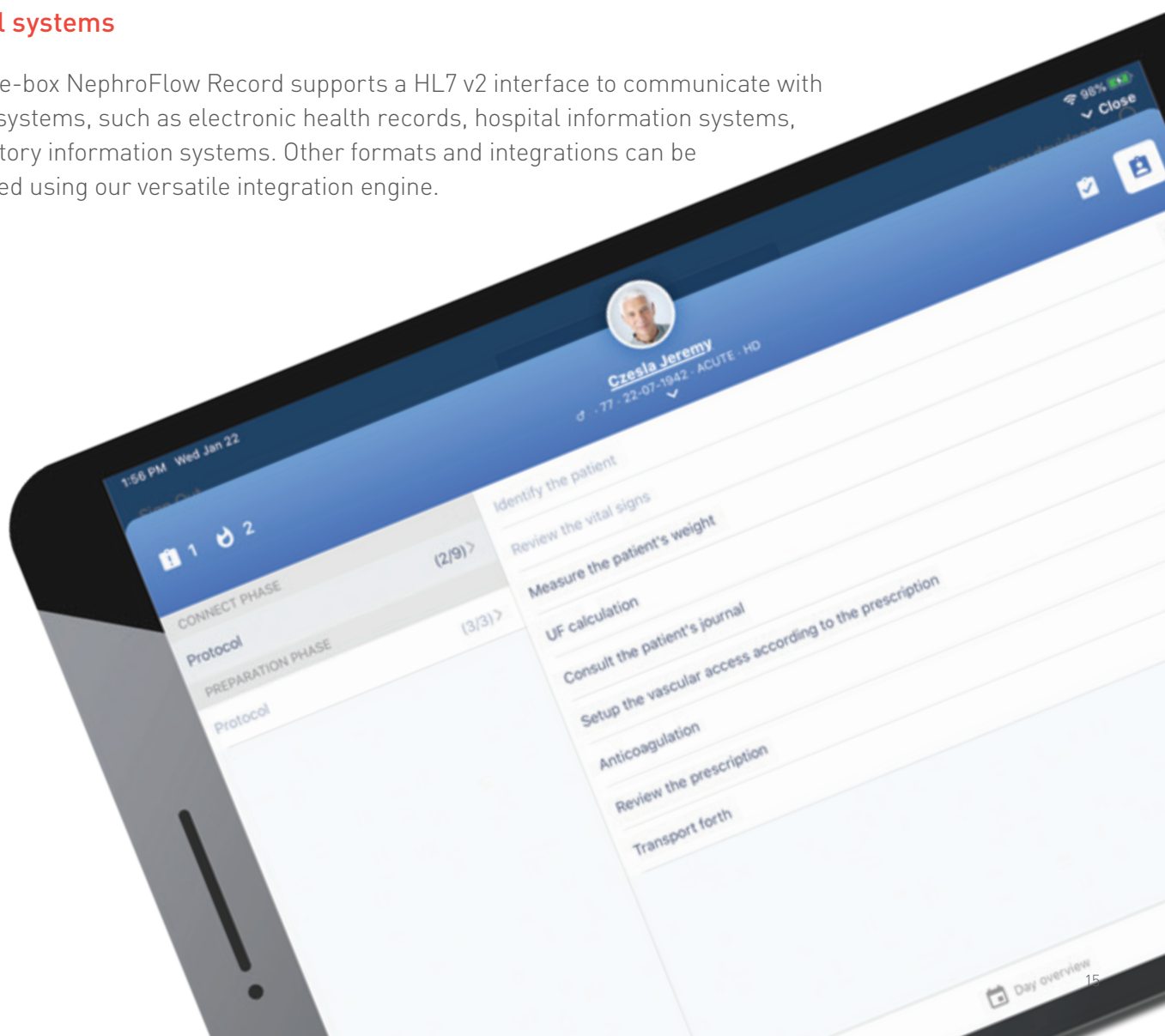
## Integrations

### Dialysis machines

The NephroFlow Product Suite supports integration with commonly used dialysis machines and weighing scales.

### External systems

Out-of-the-box NephroFlow Record supports a HL7 v2 interface to communicate with external systems, such as electronic health records, hospital information systems, or laboratory information systems. Other formats and integrations can be customized using our versatile integration engine.



Nipro Renal Care is part of Nipro Corporation Japan, a leading global healthcare company established in 1954. With over 33.000 employees worldwide, Nipro serves the Medical Device, Pharmaceutical, and Pharmaceutical Packaging industries.

Nipro Renal Care is a global market leader with over 5 decades providing renal solutions for dialysis and dialysis-related treatment. We specialize in developing dialysis machines, water treatment systems, and a comprehensive portfolio of disposable medical equipment.

In order to address the needs of patients, healthcare professionals, and procurement managers alike, Nipro Renal Care is driven by innovation and patient safety to offer the highest quality products that optimize time, effort, and costs.

**BECAUSE EVERY LIFE DESERVES AFFORDABLE CARE**



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