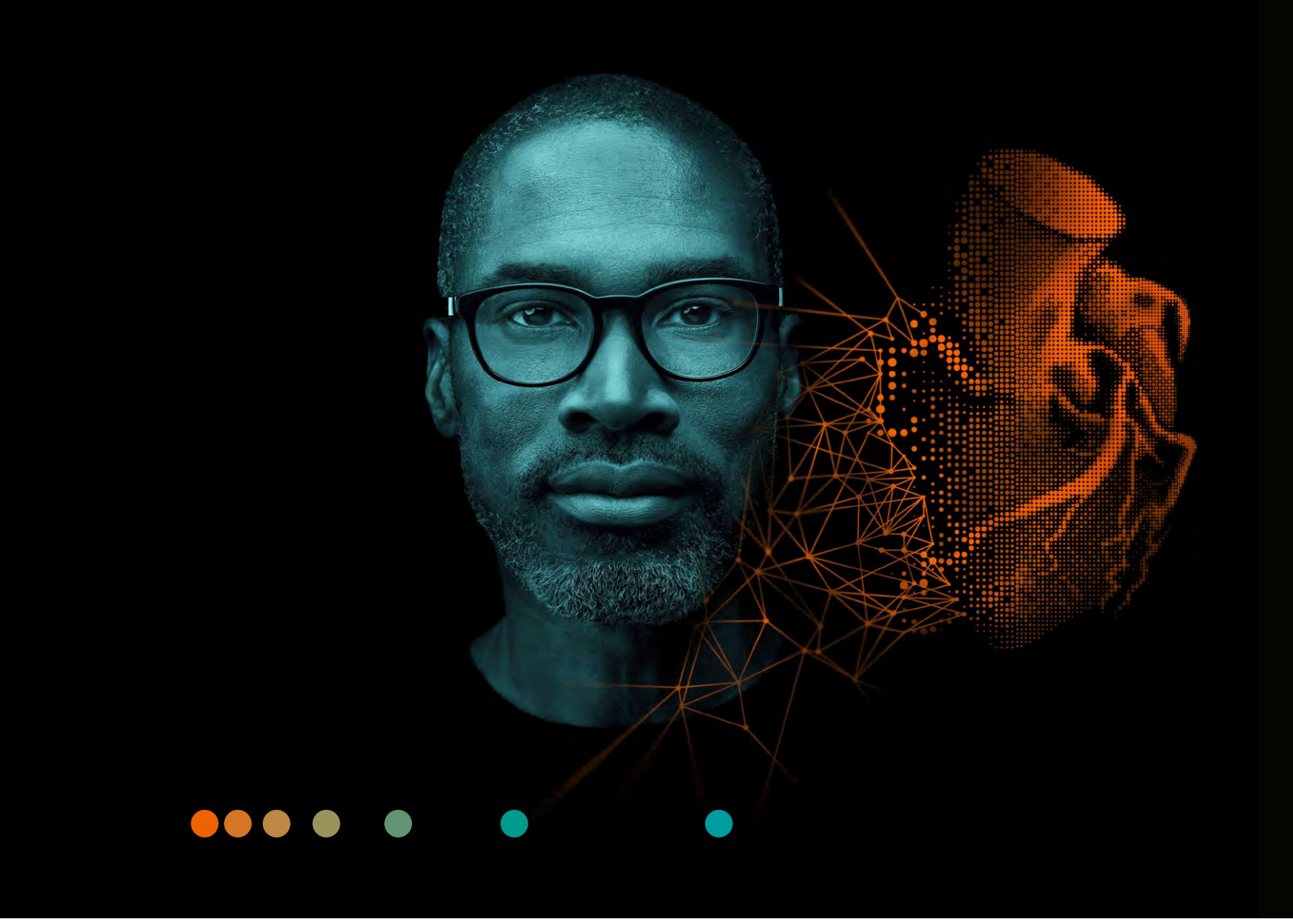

White paper

Increasing the value of cardiology reports through structured reporting

Using multi-modality structured reporting for clinical research and education

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Structured reporting in multi-modality

Hospitals continuously generate masses of clinical information stemming from patient medical records, medical examination results, device-generated data, to name a few. This data requires, naturally, appropriate storage, but more crucially it represents an incredibly valuable asset that needs to be managed and analyzed in order to become actionable, that is, be of value either to the patient and healthcare organization. Otherwise, big data quickly becomes a big effort and burden without yielding meaningful results.

Cardiology is a data-driven field in healthcare. In this day and age, clinical patient reports are predominantly performed using traditional methods, such as narrative or dictation, however, a trend toward structured reporting is gaining ground. This has the potential to vastly improve consistency in patient documentation as well as ensuring that big data can be easily archived and analyzed ad hoc to improve patient care outcomes.

"Key take away message is that structured reporting improves the quality of reports, allows more consistency of reporting, saves time and allows data mining"

Ricardo Fontes de Carvalho
Cardiology Director at Centro Hospitalar de V. N. Gaia

Pioneers in cardiac intervention, visionaries in data management

For over 15 years, Prof. Dr. Ricardo Fontes de Carvalho and the cardiovascular team at Centro Hospitalar de Vila Nova de Gaia/Espinho in Portugal have been using *syngo* Dynamics[1] to archive, post-process and report on cardiac examinations and interventions.

"It is perceived as one of the largest and most advanced Cardiology departments in the country with both European and worldwide projections, being the first cardiac center to use 4D intracardiac echocardiography worldwide and to perform complete trans-septal mitral annuloplasty."

The department has a team of over 180 staff elements, of which 27 are Cardiologists. They started using structured reporting back in 2006, when there was still lack of clarity with respect to the benefits of having a robust cardiac data management. The efforts have started to pay off, enabling the department to perform very unique scientific studies and share, on the basis of their vast experience, a mature view on the use of structured reporting for clinical, research and educational purposes.

What is structured reporting all about?

Structured reporting was created with the purpose of helping physicians create clinical reports with the support of a predefined worksheet. The predefined design guides physicians to follow a checklist and fill out mandatory fields, while reducing variability and ensuring standardization. Since there are pre-defined fields to be filled out for each clinical parameter, this information can be stored in a structured way and later be used for further diagnostic or research purposes.

syngo Dynamics

the single, enterprise wide, multi-modality intelligent reading and reporting platform for cardiovascular care

Is structured reporting really a time saver?
At a first glance, one could think that it takes the physician more time to complete a structured report than to dictate it. However, it is clear that manual reports make it challenging to access and share data in the long run. There is high variability among the multiple terms used by different physicians, making it much harder to locate and correlate information.

[1] *Previously referred to as Aegis, later KinetDx.*

Furthermore, data and relevant clinical information are being documented as care is being delivered at the different modalities. These are seamlessly transferred to the workstation, they populate the worksheet and automatically create sentences according to the normality of the received values. As a result, there is no longer the need to remember and recall numbers, thereby decreasing the chance of human error and associated inaccuracies.

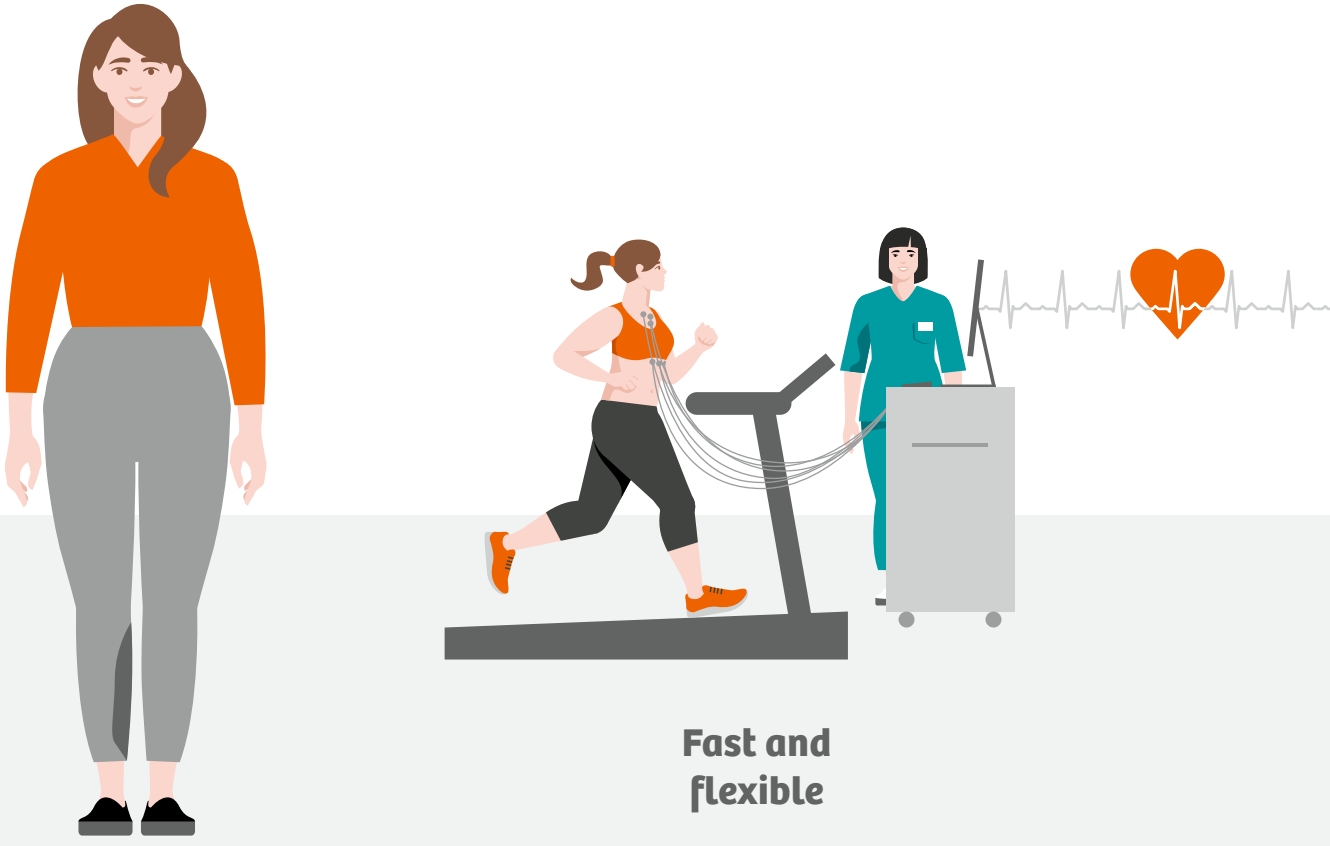
Standardizing reports, delivering quality care

Naturally there is a high rate of inter and intra-physician variability from report to report. Tailored reporting templates ensure increased compliance with appropriate use criteria, protocols and guidelines, thus enabling quality assurance in workflows.

Breaking silos in patient care with multi-modality reporting

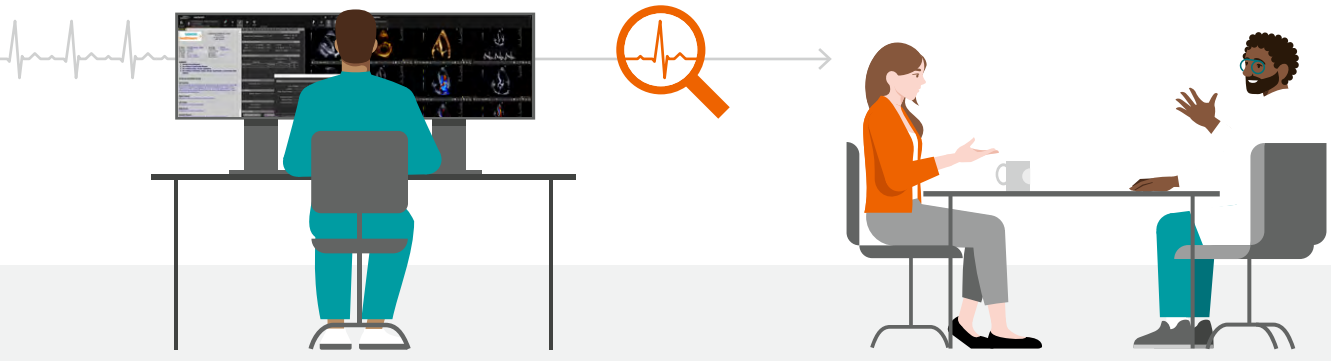
Interoperability, due to disparate reporting systems across departments, can make it challenging to have a holistic view of the patient. Cardiology data documentation is a very complex process with many silos within the service line. Consistent reporting templates across departments with pre-defined measurements and phrases allow for expedited knowledge sharing and report verification.

Making clinical data accessible, consistent and actionable allows clinicians to have all the necessary information in one location, improving the quality of care and eliminating unnecessary duplication of data.



Turning data into actionable insights
"Structured patient data enables to evaluate the patient evolution across time and retrospectively." Having a centralized multi-modality archive with structured reporting also means that with a simple click, one can perform searches based on specific criteria, such as age, gender, comorbidities, measurements, etc. In short, according to every field or variable featured on the worksheet. Using this feature, the team at Centro Hospitalar de Vila Nova de Gaia/Espinho was able to determine the prevalence and respective characteristics of patients affected with quadricuspid aortic valves through data analysis across different modalities, including Echo, MRI and CT.[1] Another example of the power of structured data was evidenced by a study where the progression of aortic valve stenosis was observed. The team concluded that the disease progression does not fit a linear model, but rather patients could be separated into two groups: rapid and long progressors. Another possible application of this database, is the development of operational performance studies based on a set of KPIs, such as turnaround time and the average door-to-balloon time, for example.

Structured reporting, a cultural change
There is a learning curve in the process of adopting structured reporting. It is therefore essential to have a champion who can drive the process and instigate its adoption, while guaranteeing that reporting templates meet the needs of the numerous subspecialities incardiology. This is crucial since investment from the clinical teams determines the success of implementing structured cardiology workflows.



Straightforward and intelligent

Precise and actionable

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↗ Precision medicine in the digital world: from data analytics to augmented reality.

Siemens Healthineers Headquarters
Siemens Healthineers AG
Siemensstr. 3
91301 Forchheim, Germany
Phone: +49 9191 18-0
siemens-healthineers.com

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