PHILIPS

Health Systems

Cardiovascular Health

Every **heart** is unique

At the **heart** of healthcare

Worldwide

Cardiovascular diseases (CVDs) are The #1 cause of death

17.3 million people die from CVDs each year

23.6 million people expected to die from CVDs by 2030
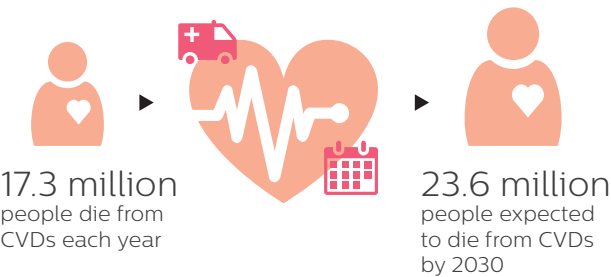
*2015 Heart Diseases and Stroke Statistics Update. American Heart Association Centres for Disease Control and Prevention, the National Institutes of Health, et al

Asia/Pacific Region

CVD is also the leading cause of death although they are highly preventable. CVD accounted for about **one-third of all deaths in 2012**.
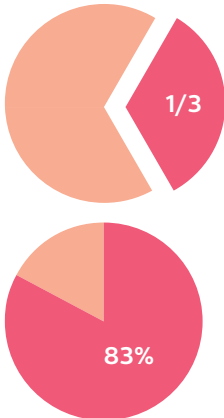
Ischaemic heart disease and stroke comprise **83% of all cardiovascular deaths in Asian countries**.

Source: WHO, 2014i

1/3

83%

The cardiology continuum is complex, non-linear, and Multiple entry points and Pathway exist.

Source: NCBI. The annual global economic burden of heart Failure.

Heart failure imposes a Huge economic burden, estimated at $108 billion per annum. With an aging, rapidly expanding and industrializing global population, this value will continue to rise.

Source: NCBI. The annual global economic burden of heart Failure.

With cardiovascular disease on the rise and becoming a more chronic condition, Philips aims to support clinicians reaching quick and confident diagnoses, provide safe and personalized treatments, and enable faster recoveries and home care.

Our global leadership position in Minimally-invasive image-guided interventions and cath-labs, Ultrasound, diagnostic imaging and Patient monitoring is only just the beginning.

At the heart of heart health is a challenge we all share: how to provide personalized heart care, while treating a growing and increasingly complex population of cardiovascular patients.

We know that while patients may suffer from the same primary condition, their lifestyle, health profile, heart structure and co-morbidities may be completely different. This dynamic means the same disease often needs to be treated in different ways, making heart care hard to scale and creating inefficiencies that lead to higher costs.

That's why we're proud to enable personalized, predictive and empowered heart care. As your partner, we will develop the right business models to share the risk in delivering integrated solutions to drive a new health and technology paradigm in the cardiology space.
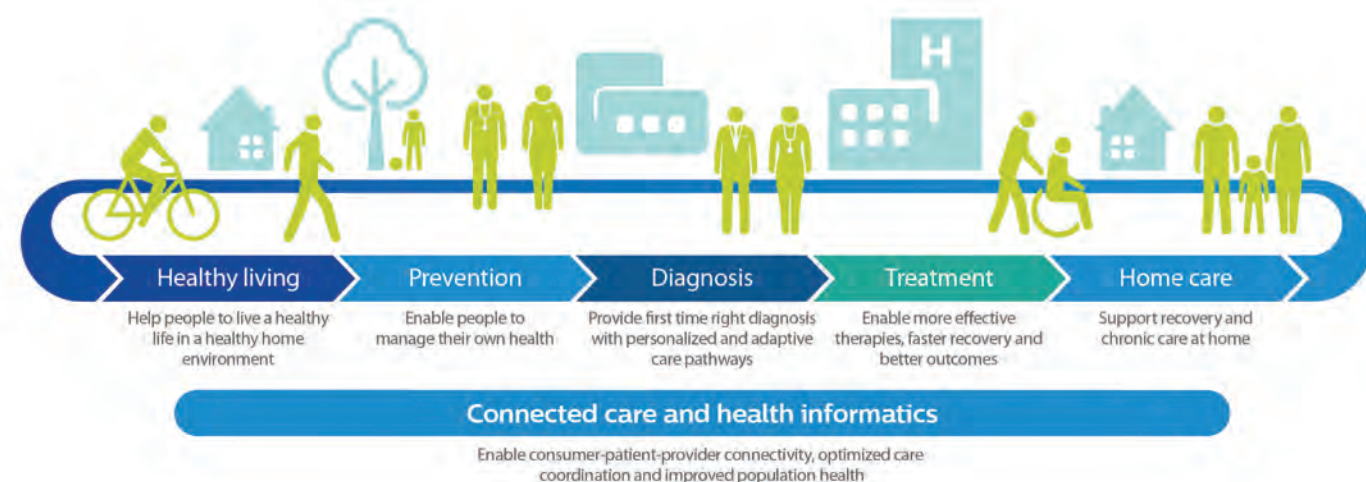
All in all, it's our way of supporting your mission to improve the world's health – one heart at a time.

Contents

Partner with you to create **innovative** solutions

Truly holistic cardiovascular care begins with the heart but looks beyond the disease to understand what really matters for everyone connected to the patient care journey.

We know you face challenges of a growing multi–morbid patient population and resource constraints, and your needs are focused around:

- **Coordinated care delivery**
- **Dealing with financial and quality objectives**
- **Building patient and care team satisfaction**
- **Easing the adoption of new techniques and processes**

Healthy living	Prevention	Diagnosis	Treatment	Home care
Help people to live a healthy life in a healthy home environment	Enable people to manage their own health	Provide first time right diagnosis with personalized and adaptive care pathways	Enable more effective therapies, faster recovery and better outcomes	Support recovery and chronic care at home

Connected care and health informatics

Enable consumer-patient-provider connectivity, optimized care coordination and improved population health

At Philips, we partner with you to create innovative solutions that help you deliver continuous, collaborative cardiovascular care for every patient – from prevention to diagnosis and treatment, to recovery and home care.

Philips believes the industry has to make a shift from merely developing individual healthcare products to developing integrated solutions, together with customers and partners.

Our wide range of capabilities across the continuum of care and our rich history of innovation enable us to build flexible, scalable and adaptable integrated care solutions around your needs.

Image Guided Therapy

Enhanced visualization and live image-guided navigation, helps you determine the optimal course of treatment with confidence. From routine coronary to the most complex structural heart, congenital, or ablation procedure, our Live Image Guidance solutions enable you to complete fast, effective and simplified procedures with an efficient clinical workflow and outcome.

## Greater insight and confidence in finding and treating the problem

EchoNavigator
Fusing live X-ray and live echo

By automatically fusing live 3D TEE and live X-ray in real time, EchoNavigator helps you identify target points and provides enhanced navigation of devices through soft tissue anatomy during interventions.
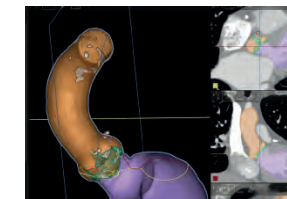
HeartNavigator
3D live image guidance

Provides automatic segmentation and landmark identification, for simplified TAVR planning and device/projection selection. Assessment of calcification around the valve helps to avoid procedure complications.
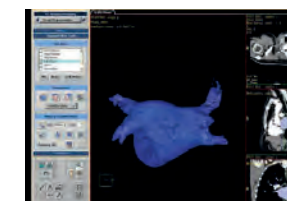
EP Navigator
Intuitive catheter navigation

Facilitates intuitive 3D catheter image guidance during AF ablation procedures. It provides a detailed 3D image of anatomy, which can be precisely registered with overlaid onto 2D live fluoroscopy to support complex procedures.

StentBoost Live [1]
See clearly, stent confidently

Instantaneous enhanced live visualization, to position and deploy balloons, stents and bioresorbable vascular scaffolds, reducing overall procedure time.
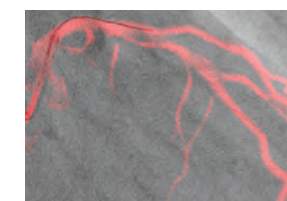
Dynamic Coronary Roadmap [1]
See clearly, stent confidently

Automatic. Real-time navigational guidance designed for procedure efficiency in complex PCI interventions without changing current standard workflow.

[1] working in progress and not CE marked and not available for sale

Better user experience to promote consistency and efficiency

Hybrid Suite with FlexMove option
Versatile room setup for interventionalists

Ceiling mounted X-ray system allows the angio unit to be positioned to either side of the table for easy access to patient. It can be moved aside or completely out of the way when desired.
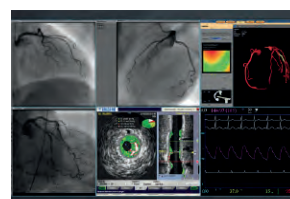
FlexVision XL
Full control of your viewing environment

Integrates all relevant images and information together in an interactive, intuitive and procedurally relevant way to expand clinical capabilities and enhance real time cross functional communication.

Xper Flex Cardio
Hemodynamic system

Integrated FFR measurements and full ECG capabilities enhance cardiovascular assessment.

Xper Information Management
Cardiovascular workflow solutions

This reporting, scheduling, inventory and intelligent data management enhance and simplify workflow for coronary artery treatment.

IntelliSpace Cardiovascular
Connected cardiology begins here

Provides a single point of access anytime, virtually anywhere to a patient-centric repository of comprehensive cardiovascular information that helps to support clinical decision-making, streamline workflow, and reduce costs.

Lower barriers for minimally invasive interventions

AlluraClarity with ClarityIQ
Industry leading image quality at a fraction of the dose

AlluraClarity with ClarityIQ technology provides high quality imaging for a comprehensive range of clinical procedures, achieving excellent visibility at ultra low X-ray dose levels for patients of all sizes.

DoseAware family
Real-time radiation exposure monitoring

Real-time dose feedback tools include DoseAware Xtend for procedure-based feedback on scattered X-ray dose (during and after the procedure) to help manage radiation exposure for patients and staff.

"The combination of Volcano's broad portfolio of imaging and measurement catheters and Philips leading interventional imaging solutions allow us to provide our customers with an integrated solution to improve procedural outcomes at a decisive stage in the health continuum."

Frans van Houten,
Chief Executive Officer of
Royal Philips

Philips Volcano

Volcano is a global leader in both FFR (fractional flow reserve) and IVUS (intravascular ultrasound) and part of Philips' industry leading solutions to decide, guide and confirm the right therapy for each patient in real-time during image-guided therapies.

iFR is a solution unique to Volcano, it has the ability to synchronize pressure measurements to a 'wave-free' period in the patient's heartbeat which means that no hyperemic agent is needed. By eliminating the need for hyperemic agents, iFR offers the benefits of reduced procedure time, cost and complexity.

In image-guided treatments of the heart and blood vessels, there is increased clinical evidence which demonstrates that the use of imaging and measurement catheters in conjunction with interventional X-ray imaging helps improve procedural outcomes.

Echocardiography

Philips' family approach to Echocardiography systems adds value by enabling you to build your portfolio optimized to your situation or needs with common user interface and shared transducers.

The EPIQ platform offers our highest level of premium performance with exceptional image resolution and detail along with extraordinary levels of information. It brings high-quality ultrasound imaging to every echocardiography setting.

nSIGHT Imaging, PureWave technology and xMATRIX technology combine to provide outstanding image quality on every patient.

Unique Anatomical Intelligence tools turn images into answers: with advanced organ modelling and proven quantification, exams are easy to perform, more reproducible and deliver new levels of clinical information.

- **HeartModel brings automated 3D views**, robust reproducibility and advanced quantification to cardiac ultrasound imaging.
- **Only truly single transducer solution** capable of all imaging modes at the touch of a button including 3D imaging and iRotate all housed in an ergonomic transducer.

- **CX50 xMatrix is the only premium compact ultrasound system** featuring live 3D TTE and supporting the integration of 3D TTE with fluoroscopy.
- **Clinicians have trusted Philips Live 3D TTE for millions** of exams since 2007. We have changed lives together.

- **Affiniti is a complete echocardiography solution that addresses the needs of a busy department**, while incorporating those innovations that make Philips Ultrasound the global leader in echocardiography.
- **Sparq is specifically designed for the ICU environment.**

TEE sharing

The adult TEE transducer can be shared across all our cardiology portfolio, making your investment more efficient.

The Paediatric TEE transducer can also be shared across EPIQ, Affiniti and CX50 products.

Critical Care Unit
Sparq*

Diagnostic Lab
EPIQ, Affiniti*

Cath Lab and Operating Room
CX50 xMATRIX

Computed Tomography

Certainty lives in layers
Philips IQon Spectral CT

As the world's first spectral detector-based CT, the Philips IQon Spectral CT delivers multiple layers of retrospective data in a single, low-dose scan, empowering you to improve clinical confidence that may impact your quality outcomes.

By delivering spectral results 100% of the time In a single scan, the Philips IQon Spectral CT can:

- **Reduce time and costs** by decreasing the number of patient findings that are indeterminate, providing the opportunity to positively impact patient care

- **Reduce workflow complexity**

- **Reduce the need for additional tests** through the ability to create angiograms from routine or low injected contrast" volume studies

- **Transform a sub-optimal CTA exam** into an optimal diagnostic CTA

Magnetic Resonance

Ingenia provides digital clarity and speed.

Unique digital architecture – dStream, first ever digital broadband delivers premium image quality with digital clarity and speed. iPatient patient-centric imaging with calming In bore patient experience

An imaging platform for today and tomorrow:

More accessible
Fast and robust
Patient centric

More definitive
Quantitative
and Advanced
visualisation

More precise
MR guidance

We have specific cardio tools for you available on our Ingenia platform:

ScanTools CardioVascular: Designed for high-quality vascular imaging, and supports assessment of cardiac morphology and functional studies of the heart and surrounding vessels.

MR Software CardiacQuant: Get access to exciting new applications for cardiology, which can help in the assessment of myocardial tissue characteristics and guide early decisions for therapy.

MR Software StarQuant: With a fast, single breathhold scan, StarQuant gathers information to provide you with comprehensive graphs and quantitative maps.

Patient Care and Monitoring Solutions

IntelliSpace ECG
Managing workflow your way

Philips delivers current and previous ECGs to you right at the point of decision – including PageWriter cardiographs, IntelliVue monitors, IntelliSpace Cardiovascular and even clinicians' smartphones.

- Review, analyze, and edit ECGs from multiple connected locations
- Access ECG data at point of decision (including from mobile devices) and view ECGs from multiple vendors and modalities
- Scalable system to grow with you
- Industry-standard platforms to safeguard performance

HeartStart MRx
Connected Care

As the first advanced networked monitor/defibrillator, HeartStart MRx incorporates many of the same algorithms, patient connections, and configuration choices as Philips premier bedside monitors.

Built to be rugged, reliable, and easy-to-use, the Philips HeartStart MRx Monitor/Defibrillator with our advanced DXL 12-Lead ECG algorithm seamlessly provides:

- **Industry-leading** patient monitoring capabilities
- **Superb diagnostic** measurements
- **Robust and reliable** STEMI clinical decision support tools
- **Evidence-based,** proven resuscitation therapies
- **CPR guidance** with the Q-CPR™ measurement and feedback tool.

HeartStart Onsite
Ready to act. Ready to go.

Philips AED solutions with Life Guidance act as your personal coach to guide you through a cardiac emergency with a simple, step-by-step process. Adaptive instructions and intelligent sensors keep you on track to automatically deliver the right therapy, helping give you the confidence to lead the way to save a life.

HeartStart Onsite is the first and only defibrillator available without a prescription.

With QuickShock, the HS1 and FRx are among fastest in class delivering shock treatment after CPR in typically 8 seconds.

ST80i Stress Testing System
Workflow that works for you

Fueled by the workflow needs of clinicians, the Philips ST80i Stress Testing System opens up new avenues for productivity and decision-making. ST80i features a wireless patient experience, bi-directional connectivity, and advanced decision support tools that enhance data review, patient care, and workflow efficiency.

- Facilitates clinical workflow by wirelessly performing stress procedures in an intuitive, customizable format.
- Provides advanced clinical decision support tools to assist with clinical evaluation.
- HIS connectivity to quickly acquire patient demographics and orders to speed workflow.
- Interfaces with IntelliSpace ECG Management System to enhance workflow of cardiographs, stress and Holter.
- Electric confirmation with a signature of stress reports.
- Export final reports to the hospital electronic medical record (EMR/EHR) upon completion of report.

HeartStart Telemedicine System
Share critical patient data

Quickly send and share critical inbound patient data ahead of arrival. The data management system smoothly transfers objective data to the next care facility, helping speed response times and drive effective patient therapy.

- Workflow customization
- Flexible data distribution
- Rich clinical information drive patient care
- Enables more communication and collaboration with EMS

Holter Monitoring System
Ambulatory ECG analysis accelerate your workflow

Philips Holter Monitoring System is designed to simplify life for you and your patients. It provides all the tools you need to record, analyze and diagnose ECG data —quickly, accurately and confidently.
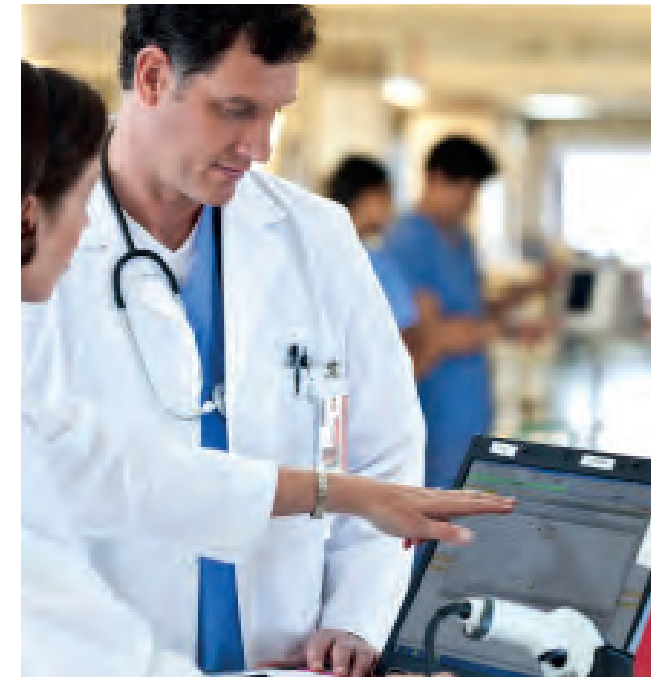
- Easy to use and powerful scanning software
- Connect and save – seamless connectivity
- DigiTrak XT Recorder – smart and innovative

PageWriter TC70 cardiograph

- **The Philips PageWriter TC70 cardiograph** is designed to meet high-volume ECG demands
- **Integrated interpretation** on up to 16 leads
- **Advanced STEMI** clinical decision support tools
- **Previous ECGs** at the bedside for immediate comparison

SureSigns VSi Vital Signs Monitor
Vital signs made simple

Providing basic vital signs monitoring in a portable and reliable package, the VSi vital signs monitor is intuitive to use and works easily with your existing network. Bar-code scanning technology and optional wireless connectivity allow the VSi to communicate directly with your Electronic Health Record (EHR) system.

- Wireless capability allows records to be easily send to your EHR system
- Real-time information with fewer errors
- Ease of mobility

IntelliVue Guardian Solution
Keep watch and intervene early

IntelliVue Guardian Solution allows caregivers to automatically acquire vital signs, automate early warning scoring (EWS) calculations, aid in identifying early signs of deterioration, and can inform responsible clinicians for early, effective intervention.

- Helps improve and save lives
- Simplifies clinical workflow
- Improves financial outcomes

Up to 8 hrs prior

70% of cardiac arrest patients show signs of respiratory deterioration*

*Lippincott, Williams and Wilkins, 2012

Up to 6 hrs prior

66% of cardiac arrest patients show abnormal signs and symptoms*

*American Heart Association

Within 15 mins of cardiac arrest

is when most Rapid Response Team patients are identified

– most often too late to intervene*

*American College of Chest Physicians http://journal. publications.chestnet.org/ article.aspx?article=1186438

How automated Early Warning Scoring (EWS) can aid in identifying patient deterioration when there's still time to make a difference

Tune back the clock:
EWS can aid in identifying subtle warning signs of physiological decline 6 to 8 hours before an event*

Enhance rapid response from point of care

Have a positive impact on hospital length of stay

Clinical Informatics

Data should help you do your job, not slow you down. Our cardiovascular informatics solutions streamline workflow and optimize processes, giving you a single access point into advanced clinical applications, analytics, multi-modality images, and reports.

Armed with the right information, you can provide coordinated, continuous, and collaborative care – personalized for every patient.

IntelliSpace Portal

Expanding your view of the heart and blood vessels
Diagnose and monitor cardiovascular diseases with increased confidence. Rely on a comprehensive set of multimodality applications to examine and quantify vascular lesions as well as quantitative techniques to help you characterize pathologies in friendly and non-invasive diagnostic methods. It also supports procedures with automation, easy editing, and specific findings creation.

Category Leader in Enterprise Advance Visualization

Total patient overview from one seat
Compare your historical data from multiple imaging modalties (MR, CT, MI, US, DXR, and iXR) to get a comprehensive view of your patient. With a server based solution, there's no need for multiple workstations. Perform all your viewing and analysis in one session, on a single client, without leaving your chair. And the IntelliSpace Portal 8.0 can be accessed from virtually any computer in your department, your hospital, or even across your network.

IntelliSpace Cardiovascular
Cardiovascular information you need. All in one place

1   Use the intuitive Cardiology Timeline to navigate through care events at a glance.

2   Save time by viewing images from different modalities side by side period.

3   A mini timeline provides a tempo of the patient.

4   Access and compare documents side by side period.

Xper Information Management
Xperience cardiovascular technology that revolves around your workflow

1   Xper Information Management is part of the Philips integrated cath lab (ICL) suite offering Philips advanced cardiovascular X-ray, physio-monitoring, reporting and cardiovascular image management systems.

2.   Simplify your cath lab workflow and enhance productivity for the entire cardiovascular enterprise

3.   Enhance the productivity for coronary artery treatment with flexible modules such as reporting, scheduling, inventory and intelligent data management.

Telehealth Centre

Accountable Care Organization / IDN

| ICUs | ED | Med/Surgical | SNF | LTAC | Clinics | Specialists | Home |

Personal Health Programs

People are more engaged with their health, taking more ownership than ever before. Innovations are needed to help motivate people, prevent disease, and provide support as they navigate their health journey.

Philips personal health programs represent a new era in connected care for consumers, patients and health providers, as healthcare continues to move outside the hospital, and into our homes and daily lives. Personal health programs empower individuals to take greater control of their health, with each health program comprising connected health measurement devices, an app-based personalized program combined with secure, cloudbased data analysis. The programs are built on the Philips HealthSuite digital platform, an open and secure, cloud-based platform that collects and analyzes health and other data from multiple devices and sources, such as a health watch, blood pressure monitor, an ear thermometer, and body analysis scale.

Hospital to Home
Transforming care delivery

Critical and Acute Care Programs
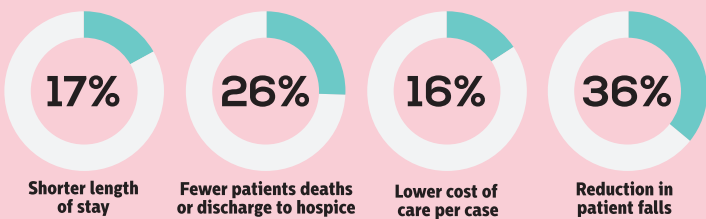**Remote support for critical care**

Support advanced care delivery models through a unique combination of technology, clinical expertise and support that enables improved clinical and financial outcomes.

Tailored Ambulatory Care Programs
Empowering people to self-care

Provide daily connection between post-acute caregivers and patients, utilizing technology and clinical process to expand access, improve outcomes and provide a better experience for patients.

Telehealth enables better patient outcomes at lower costs and operational benefits

17%	**26%**	**16%**	**36%**
Shorter length of stay	Fewer patients deaths or discharge to hospice	Lower cost of care per case	Reduction in patient falls

1.Lilly, CM, et al, A Multi-center Study of ICU Telemedicine Reengineering of Adult Critical Care, CHEST, December 2013
2.Dahl D, et al. People, Technology, and Process Meet the Triple Aim. Nurs Admin Q. 2014 Jan-Mar; 38(1): 13–21.
3.Ryan Spaulding, PhD , Medicaid HCBS/FE Home Telehealth Pilot, Center for Telemedicine and Telehealth University of Kansas Medical Center November 30, 2010
4.Bashshur RL, et al. The Empirical Foundations of Telemedicine Interventions for Chronic Disease Management. Telemed and e-Health. 2014 Sept; 20(9):769–800.

Assistive remote monitoring technology and service design play a role in improving patient outcomes and reducing cost among those living with chronic and long-term conditions:

90%	**22%-32%**
people feel more control, confidence or ability to cope with their condition	reductions in emergency admissions and secondary care costs for patients with above average risk (25% or more)

1. Cees van Berkel, et al. Evidence for Supported Self Care at Scale. Short Report, March 2016.

Population Health

Philips is engaged in innovation that deepens its value proposition for the HCP ecosystem and the patients they serve. Ultimately Philips will provide the HCP access to an end-to-end population management transformational program that connects the patient, family caregiver, and HCP clinical team. Providing solutions that enable clinicians to be more productive and increase quality of care is at the core of Philips Population Health; allowing organizations to monitor many patients over a long period of time with senior-accepted wearable technology. As governments, healthcare providers and patients increasingly focus on reducing unnecessary healthcare expenditures, we will provide cost effective solutions enabling them to age in the place they call home.

We are committed to using an approach to enable HCPs to partner at whatever stage of readiness for systems integration and technological innovation. Innovative HCPs are invited to join us on the journey to support the preference of seniors to age in the comfort of their own home. We aim to meet the goals of the HCP to serve more patients, more efficiently, and more effectively.
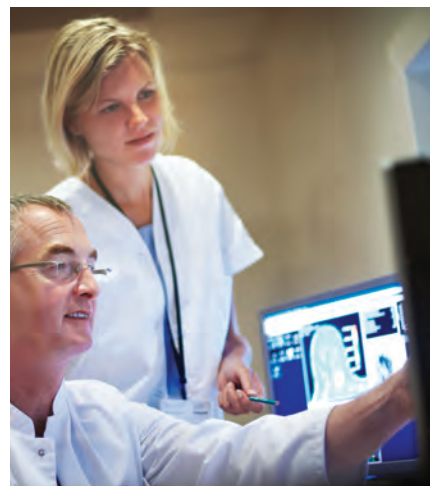
Healthcare Transformation Services

Supporting the transition to value-based care

Despite extraordinary advances in science and technology and the steadfast commitment of providers and administrators, healthcare systems still face intense pressure to deliver quality care to all who need it within sustainable cost structures.

Healthcare has become too complex, too fragmented – and too expensive. What's required is a wholesale transformation of care delivery, with a laser focus on improving the metrics that matter to patients: quality, access, affordability, and outcomes.

Philips Healthcare Transformation Services was established to provide a support framework for long-term healthcare transformation. We partner with leaders of healthcare systems to deliver end-to-end, patient-centric services and solutions across the continuum of care. Our customized approach is designed to improve clinical and operational effectiveness while contributing to the financial stability of the enterprise. We work with you at every step of your transformation journey, providing the professional services, clinical and business expertise, data analytics, research and innovation resources, and care virtualization platforms you need to deliver value-based care.

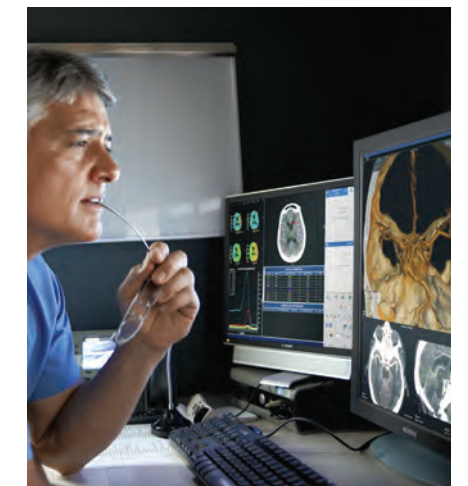**Clinical and business performance improvement**
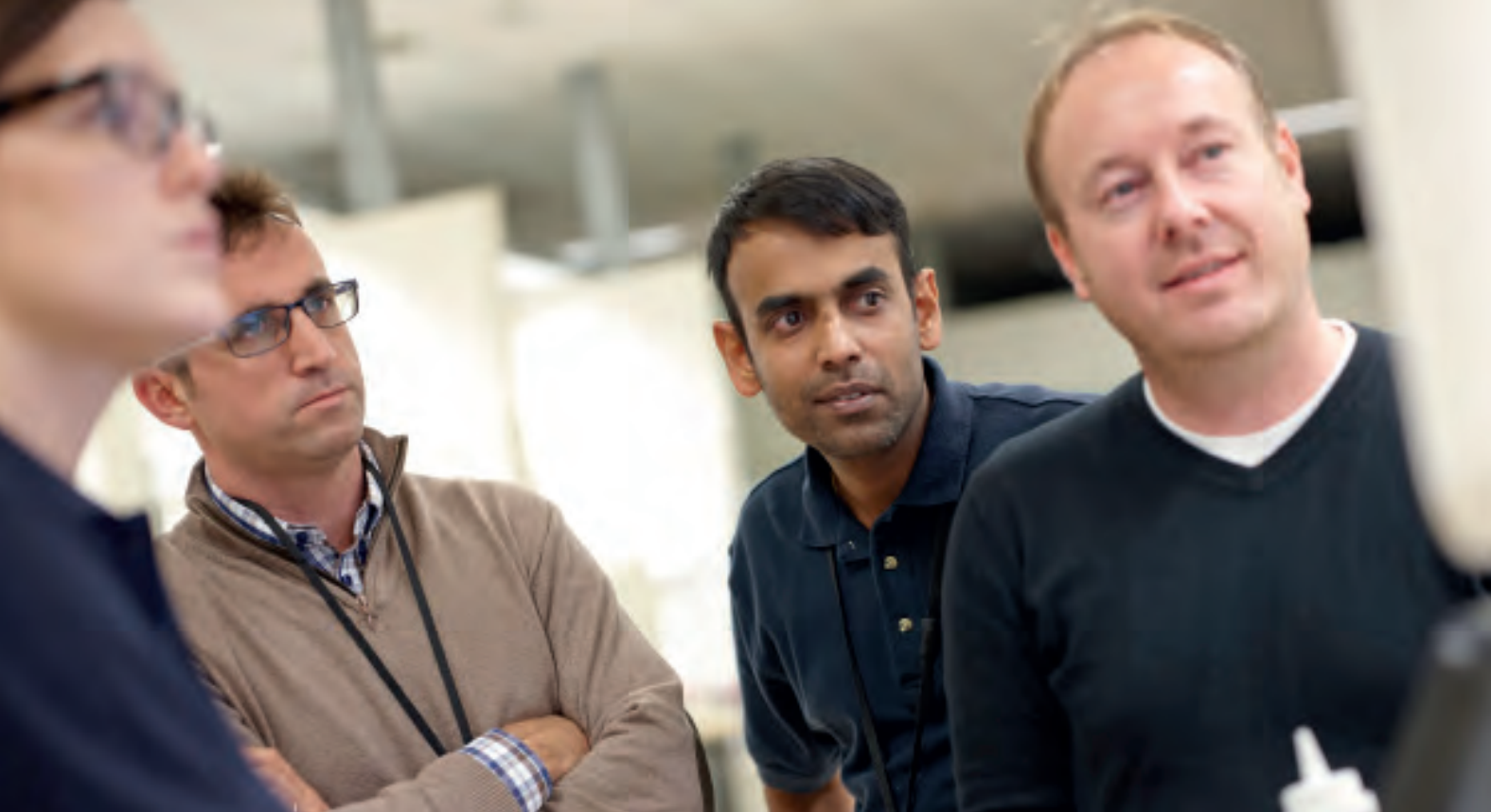
Population health

Experience solutions

Education

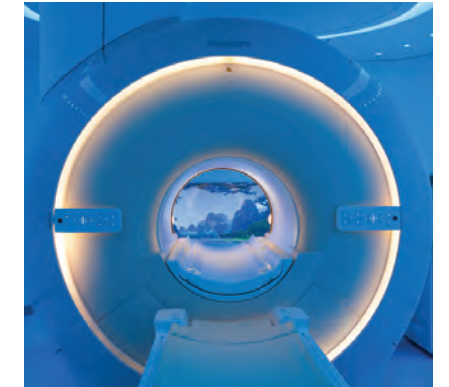**Integrated solutions and innovation partnership**

Information integration

Ambient Experience

Transforming healthcare into human care

We believe good healthcare is people-centric and there is value beyond medical and technical expertise. A professional environment must also be psychologically supportive, instilling a sense of well-being.

Ambient Experience integrates technology (dynamic lighting, projection and sound), spatial design, and workflow improvements. By adding Ambient Experience, we help hospitals create an engaging, and multi-sensorial environment.

It brings comfort to an otherwise stressful time and seeks to alleviate patient anxiety, as well as creating an efficient, clutter-free workspace for your staff. Philips Ambient Experience is based on years of clinical design research. It focuses on the values and needs of patients and medical staff by addressing the total experience flow. It integrates architecture and technology innovations to create healthcare spaces that are unique and inviting.

Customer Service

Count on us as your patients count on you

Customer service
We have listened to our customers and designed RightFit, fexible services offerings from Philips thatcan be adapted to your needs in order to support your organisation. Partner with us to maximize clinical availability and uptime of your systems and ongoing investments.

Global Infrastructure and Expertise, locally delivered
Benefit from our state-of-the-art service infrastructure, expertise and in-depth knowledge across the healthcare spectrum.

Increase uptime through proactive remote support
Receive proactive monitoring so that many system issues can be identified, and fixed without interrupting your busy schedule.

Parts Delivery
Be ensured of round-the-clock technical parts expertise, logistics and next-day delivery.

Cardiology
Portfolio
a wealth of innovation and a breadth of capabilities

IGT:
Imaging Guided Therapy

AlluraClarity / Xper in Cardiology

AlluraClarity / Xper Biplane

AlluraClarity / Xper in Electrophysiology
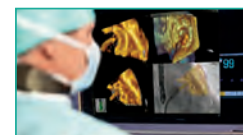
Hybrid Suite
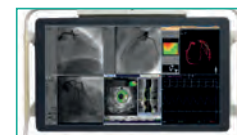
Allura Centron

Intuis

Veradius Unity

BV Pulsera

Interventional Tools

Volcano

IntelliSpace Cardiovascular

FlexVision XL

Xper IM

Xper Flex Cardio

Ultrasound

EPIQ

CX50

Affiniti

Sparq

QStation

QLAB quantification software

PCMS:
Patient Care and Monitoring Solutions

HeartStart Defibrillators

IntelliSpace ECG

Stress Testing System

Holter Monitoring Solution

Pagewriter Cardiographs

PIIC iX Central Station

IntelliVue Guardian Solution

HeartStart Telemedicine System

DXL ECG Algorithm

IntelliVue Patient Monitors
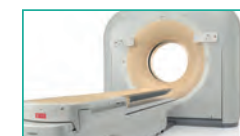
SureSigns VSi Vital Signs Monitor

CT:
Computed Tomography

ICT family

IQon Spectral CT

Ingenuity family

Clinical Informatics

IntelliSpace Portal 8.0

IntelliSpace Workstation IX

IntelliSpace Cardiovascular

Xper IM

MR:
Magnetic Resonance

Ingenia 1.5T and 3.0T

Ingenia CX 1.5T and 3.0T

Multiva 1.5T

www.philips.com/healthcare