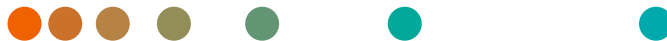


Expanding precision medicine

Reduce unwarranted variations

One of the biggest opportunities to improve outcomes while reducing costs is the reduction of unwarranted variations

siemens-healthineers.com/news/expanding-precision-medicine



18m diagnostic errors resulting in 74,000 deaths each year¹

Up to 62% of laboratory tests and 35% of radiology tests are **not followed up** resulting in missing critical diagnoses⁴



Wasteful clinical spending accounts for **one fifth** of the total costs of healthcare²



The saving opportunity⁵: **US\$ 30m** per US\$ 1bn in revenue

US\$ 342bn in lost benefits each year due to **poor data integration**³

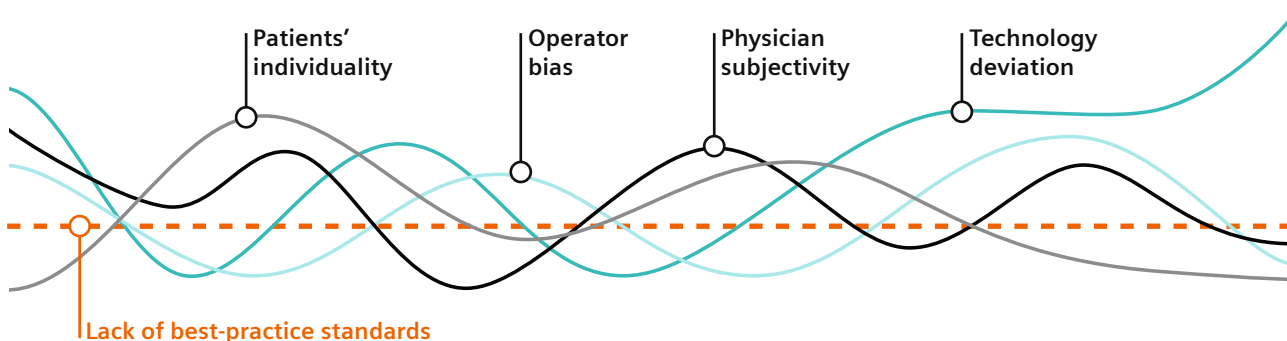
The NHS could **save £ 5bn** each year if they could **reduce unwarranted variations** across every area in hospitals⁶

There are five key sources of unwarranted variations

There are five key sources of unwarranted variations: lack of best-practice standards, the fact that no two patients are alike; operator bias, subjectivity as part of the physicians' practice and technology that does not guarantee reproducibility of results.

Of course guidelines and gold standards of care are available, but every institution has to select best-practice standards that are according to their unique reality.

Today, not all technology takes into consideration that every patient's uniqueness contributes to unwarranted variations. By increasing levels of automation, operator bias can be avoided. A lack of patient-specific information combined with the ever-growing volume of available knowledge means that physicians' decision-making is prone to subjectivity – another source of variations. Finally, technology throughout institutions should provide comparable results with up-to-date equipment.



1) <https://medcitynews.com/2016/05/diagnostic-errors-infographic/>;

2) http://www.hopkinsmedicine.org/news/media/releases/study_suggests_medical_errors_now_third_leading_cause_of_death_in_the_us;

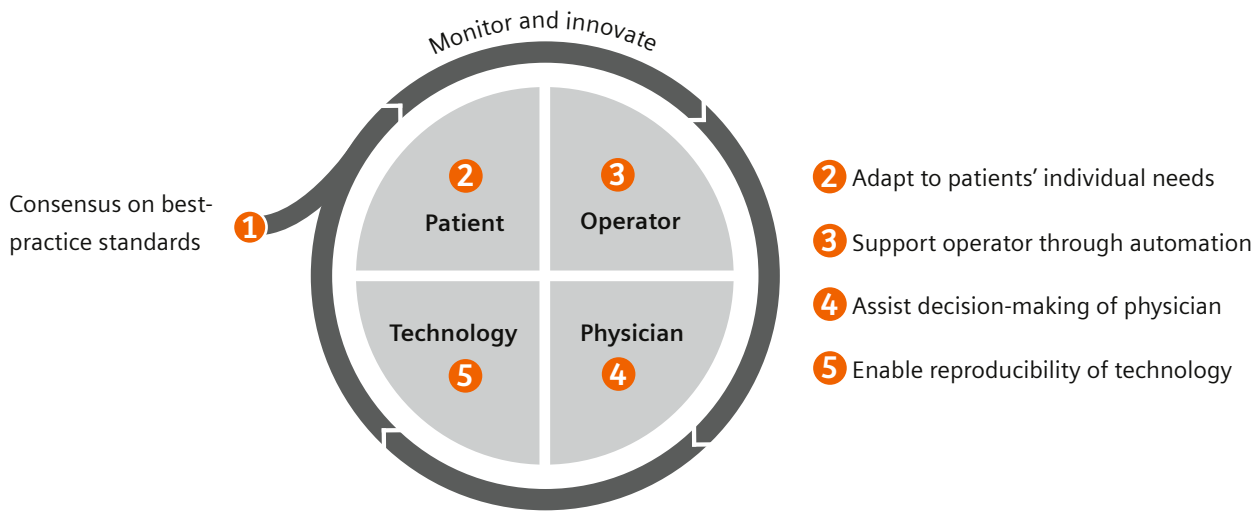
3) <https://techcrunch.com/2015/12/06/unsexy-plumbing-integrated-data-and-the-future-of-the-healthcare-system/>;






4) Callen JL, Westbrook JL, Georgiou A, Li J. Failure to follow-up test results for ambulatory patients: a systematic review. *J Gen Restricted Med* 2012; 27: 1334-48;

5) Advisory Board, *Unwarranted Variations in Care*, May 2018;

6) Operational productivity and performance in English NHS acute hospitals: *Unwarranted variations*, Department of Health and Social Care, NHS, Feb. 2016

Reduce unwarranted variations for continuous improvement



Achieve consensus on best-practice standards	Adapt technology to patients' individual needs	Support operator through automation	Assist decision-making	Enable reproducibility of technology
Apply joint approaches to define best practice standards, and execute with IT support. Continue monitoring while providing or deploying relevant expertise through the organization.	Adapting technologies to patient's individuality require systems that tailor automatically to differences in anatomy and physiology, adjusts to patient and organ motion while also adapting to pre-existing co-morbidities.	From semi-automatic quality assurance of manual steps, to full automatization of single tasks, and ultimately achieving automatization of entire workflows. Increasing automation of routine, error-prone tasks can relieve staff and empower operators.	Context-based guidance, highly-specific and quantified information assist optimal clinical path selection and provide precise information for decision making. Smart integration of information can reduce subjectivity.	Implement solutions that improve compar- ability of results throughout a healthcare system. Manage assets so that results are comparable and technology is available when and where needed.
Portfolio examples				
				
teampay Protocols execute best-practice standards and standardize smart protocols for efficient KPI implementation and monitoring.	BioAcoustic Technology in ACUSON Sequoia enables standardized ultrasound imaging regardless of patient characteristics.	Aptio® Automation total laboratory automation enables reduction of variations.	AI-Rad Companion* automatically characterizes and quantifies anatomies and abnormalities.	Asset Management Services provides access to innovative medical technology to improve workflow, assuring comparability of results.

* AI-Rad Companion is pending 510(k) clearance, and not yet commercially available in the United States and other countries.

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