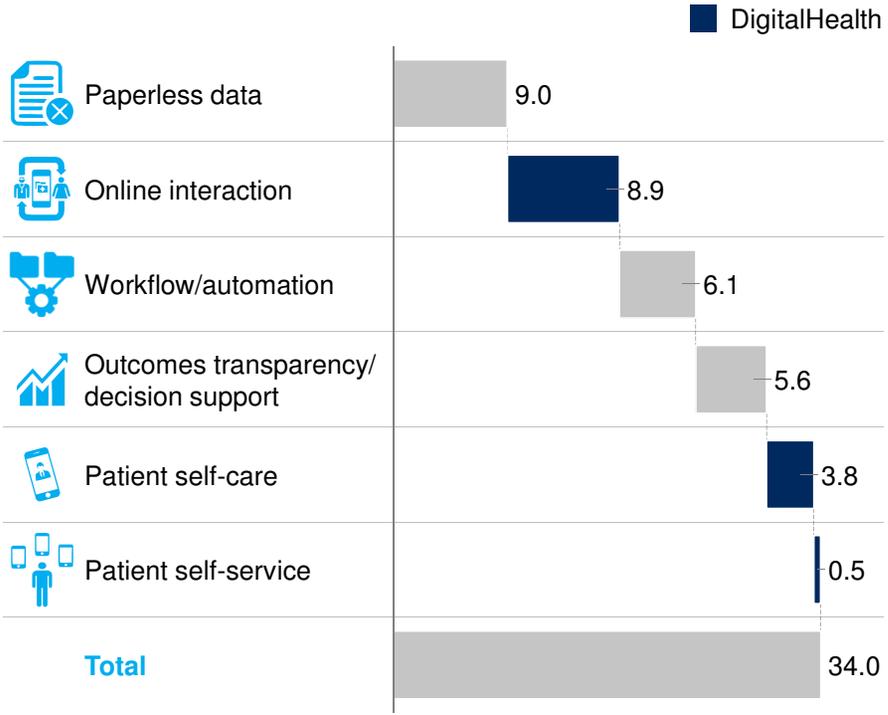


We quantified the value at stake through Digital and found that the full roll-out of 26 solutions could lead to potential benefits of up to EUR 34bn or 12% of overall German health and care spend

Potential benefits^{1,2} by digital solution category in 2018, EUR bn

Full potential of 6 digital solution categories, Germany



Relative saving to 2018 baseline **12%**

eHealth Solutions (HCP focus)

Paperless data

- Unified electronic health record/exchange
- e-Prescribing ("e-Rezept")
- ...

Workflow/automation

- Nurse mobile connectivity
- Vital parameter tracking (eICU)
- ...

Outcome transparency/decision support

- Performance dashboards
- Clinical decision support
- ...

Total: EUR 21 bn

Digital Health Solutions (patient focus)

Patient self-service

- e-Booking

Online interaction

- Tele-consultation
- Chronic patient remote monitoring
- e-Triage
- ...

Patient self-care

- Chronic disease management tools (Mental health, Diabetes, Respiratory, Cardiovascular)
- Medical chatbots
- ...

Total: EUR 13 bn

¹ Upper boundary of value range ² Numbers may not quite add up due to rounding effects
 SOURCE: McKinsey analysis, BMI, Federal Statistical Bureau

eHealth solutions represent 20.7 bn EUR and Digital Health solutions 13.3 bn EUR of the benefit potential

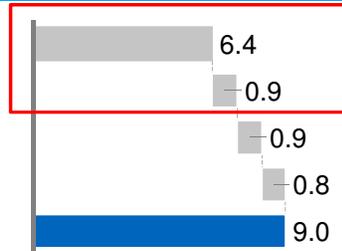
■ Total

Benefit potential^{1,2}, EUR billion

Paperless data



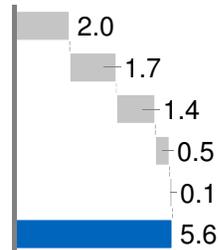
- Unified electronic health record/exchange e-Prescribing ("e-Rezept")
- Intra-hospital staff communication
- Clinician's virtual assistants (AI)



Transparency on outcome/ decision support



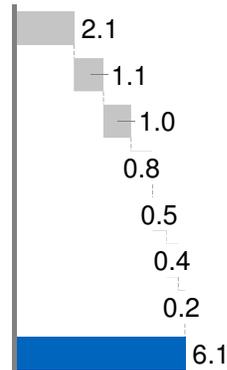
- Performance dashboards
- Patient flow management
- Clinical decision support
- Advanced payor analytics
- Genetic testing



Workflow/ automation



- Nurse mobile connectivity
- Barcoding medication administration
- RFID tracking
- Vital parameter tracking (eICU)
- Hospital logistics robotics
- Process automation through robotics
- e-Referrals

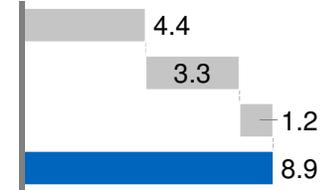


Online interaction



- Tele-consultation
- Chronic patient remote monitoring
- e-Triage

Total

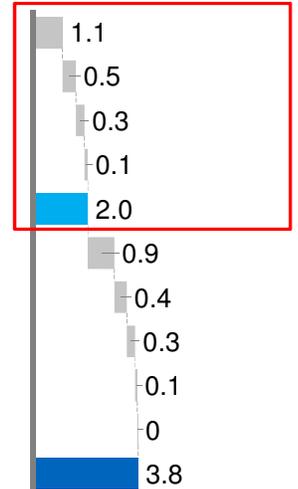


Patient self-care



- Mental health
- Diabetes
- Respiratory diseases
- Cardiovascular diseases
- Chronic disease management tools
- Medical chatbots
- Disease prevention tools
- Patient support networks
- Digital diagnostic tools
- Virtual reality for pain treatment

Total



Patient self-service



- e-Booking

0.5

1 Upper boundary of value range; 2 Numbers may not add up exactly due to rounding effects

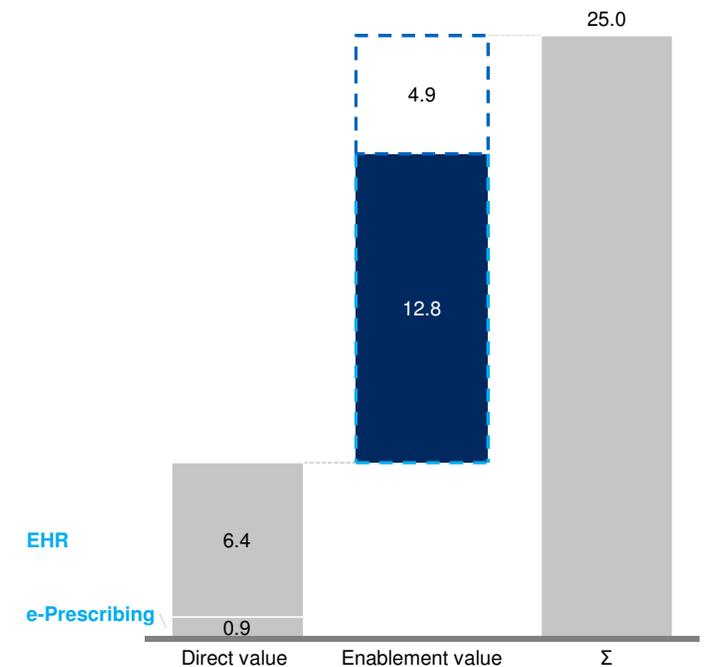
EHR and e-Prescribing enable most of the 26 digital solutions – all Digital Health solutions benefit

Digital solution	Unified electronic health record (EHR)	e-Prescribing	
Paperless data	Unified electronic health record/exchange		
	e-Prescribing ("e-Rezept")		
	Intra-hospital staff communication		
	Clinician's virtual assistant (AI)	✓	✓
	Nurse mobile connectivity	✓	✓
Workflow/automation	Barcoding medication administration		
	RFID-tracking		
	Vital parameter tracking (eICU)	✓	
	Hospital logistics robotics		
	Process automation through robotics		
Outcome transparency/decision support	e-Referrals		
	Performance dashboards		
	Patient flow management	✓	
	Clinical decision support	✓	✓
	Advanced payor analytics	✓	
Patient self-service	Genetic testing		
	e-Booking	✓	
Online interaction	Tele-consultation	✓	✓
	Chronic patient remote monitoring	✓	✓
	e-Triage	✓	✓
	Chronic disease management tools (Mental health, Diabetes, Respiratory, Cardiovascular)	✓	✓
	Medical chatbots	✓	✓
Patient self-care	Disease prevention tools	✓	✓
	Patient support networks		
	Digital diagnostic tools	✓	✓
	Virtual reality for pain treatment		

✓ Enable digital solutions ✓ Partly¹ enable digital solutions

Most digital health solutions would benefit from access to a patient's EHR. Prescription information is definitively an integral element of EHRs, but we expect that e-Prescribing has additional enablement value as we assume that e-Prescribing data has to be available in real time (while we expect EHR information to be available with a time delay).

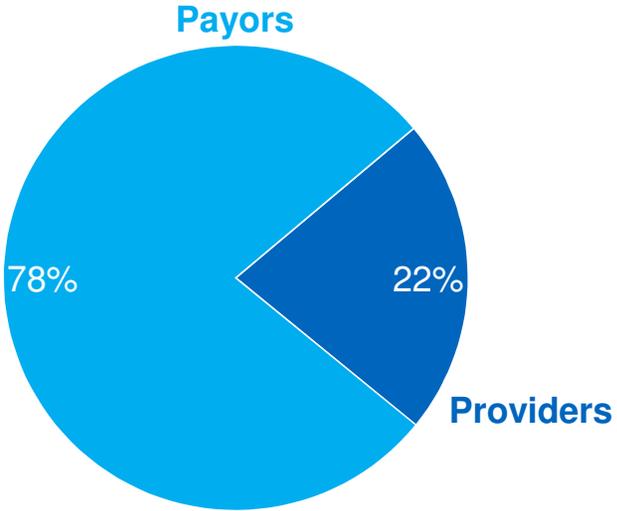
Benefit potential^{2,3}, EUR bn



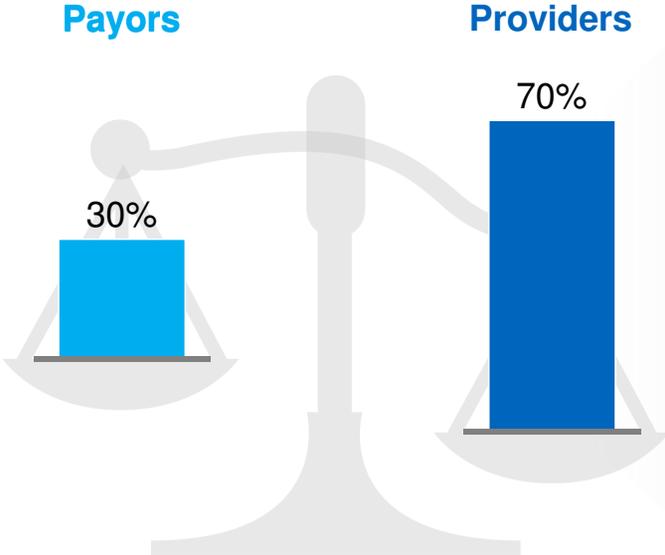
¹ They are not fully enabled by EHR, however in order to realize 100% of benefits EHR would need to be in place. 50% of value is attributed; ² Upper boundary of value range; ³ Numbers may not add up exactly due to rounding effects

In previous studies the distribution of value has been in favor of the payor/health systems – yet, we see that the largest share of the value (70%) will be captured by providers and not payors

Gematik study (2006): Value capture by payors and providers



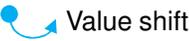
Percentage of the total value of EUR 34 bn that resides with payors vs. providers



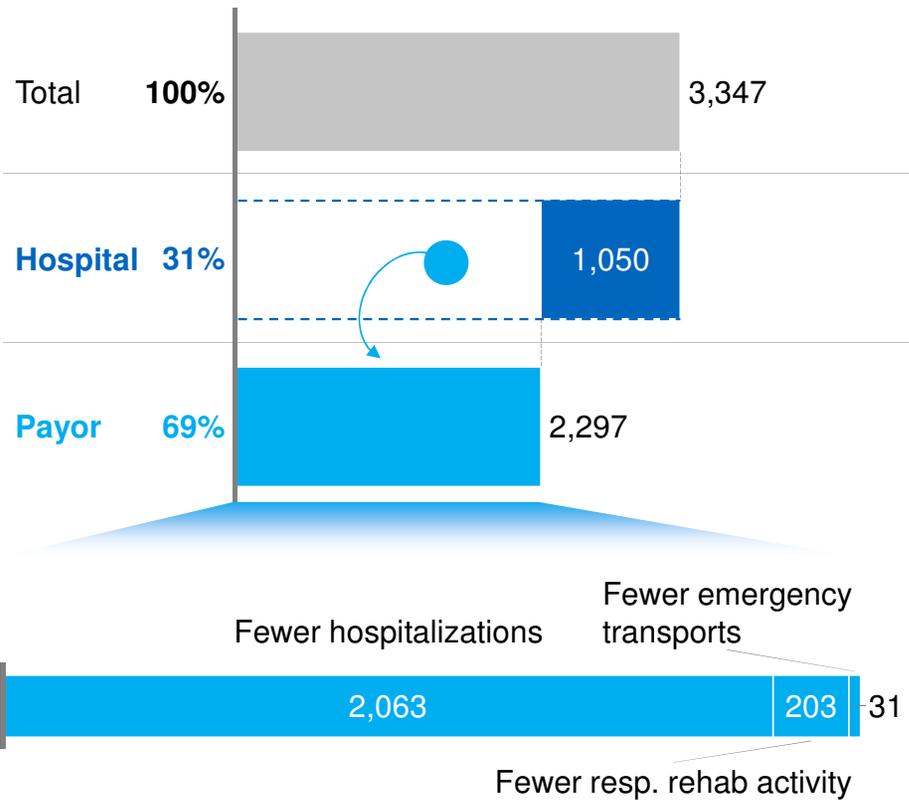
Hospital providers	26%
GPs	19%
OP specialists	17%
Medical home care providers	3%
Long-term care provider	2%
Rehab providers	1%
Other health professionals	1%

SOURCE: Cost benefit analysis of telementatics infrastructure in Germany, gematik 2006

Healthcare providers and payors take advantage of different effects when realizing the benefit potential – example: remote monitoring of chronically ill patients



Benefit potential^{1,2} from remote monitoring of patients, EUR millions



Total anticipated benefit potential from remote monitoring

Efficiency and productivity gains: by shortening the length of hospital stays, service providers would potentially benefit due to improved internal efficiency and the fact that they initially receive the same remuneration³

Demand reduction: by reducing hospital stays and thus reducing associated rehabilitation measures and lowering costs for emergency transport of chronically ill patients, payors could potentially benefit (due to lowering of case group-specific remuneration for hospitals, since certain activities become redundant and are thus eliminated)

Discussion point: The long-term realization of efficiency advantages raises questions. Will these efficiencies remain with the service providers or will they be transferred to payors via remuneration adjustments of individual DRGs?

¹ Upper limit of value range; ² Due to rounding affects, the combined totals may not add up to the stated total; ³ Depending on subsequent future adjustments (possibly reduction) of remuneration with DRG flat rates per case
 SOURCE: ...

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WHY DOCTORS HATE THEIR COMPUTERS

*Digitization promises to make medical care easier
and more efficient. But are screens coming between
doctors and patients?*

By Atul Gawande

