



# Modelling the potential of digitally-enabled processes, transparency and participation in the NHS

NHS England – Directorate for Patient and Information

Evidence summary

April 2014

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## The aim of this work is to:

- Provide an evidence base to inform better investment decision making in relation to the use of data, patient participation and transparency.
- Support NHS England's vision of modernising customer services through patient participation, better data and effective use of information technology.

# In this project we are delivering four end products



An estimate of the potential opportunity from data and transparency on the NHS across both demand and supply



A review of the evidence base for the potential of data and transparency interventions both nationally and internationally



An adaptable model documenting all levers and assumptions for future forecasting work



A document summarising the analysis of costs and benefits and prioritisation of the digital interventions

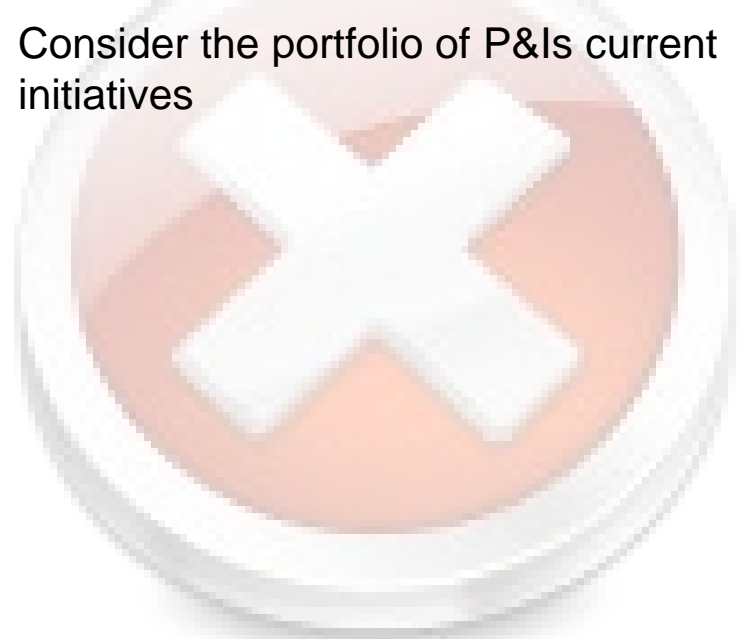
# What this work is and what it is not

## The aim of this work is to ...

- Codify the existing evidence base to inform better investment decision making in relation to the use of data, patient participation and transparency
- Estimate the potential impact and costs to identify the major interventions that can be scaled up
- Highlight the limitations of technology alone and the need for enabling changes
- Make recommendations on who should do what in the system to realise this potential
- Clearly differentiate between a “baseline” scenario extrapolating the impact of existing technologies and a “bold” scenario looking to the future of nascent technologies

## This work does not...

- Attempt to be a substitute for local area business case modelling
- Attempt to be a strategy for the Patients and Information Directorate
- Consider the portfolio of P&Is current initiatives



# The new digitally-enabled NHS could look different to the NHS today

## People may...

Monitor their own health via an online portal



Book appointments and get prescriptions online



Talk to their doctor online



## Providers may...

Share information to improve patient care



Use information to improve their operations



Automate routine tasks



## Commissioners may...

Use deep insights to incentivise providers

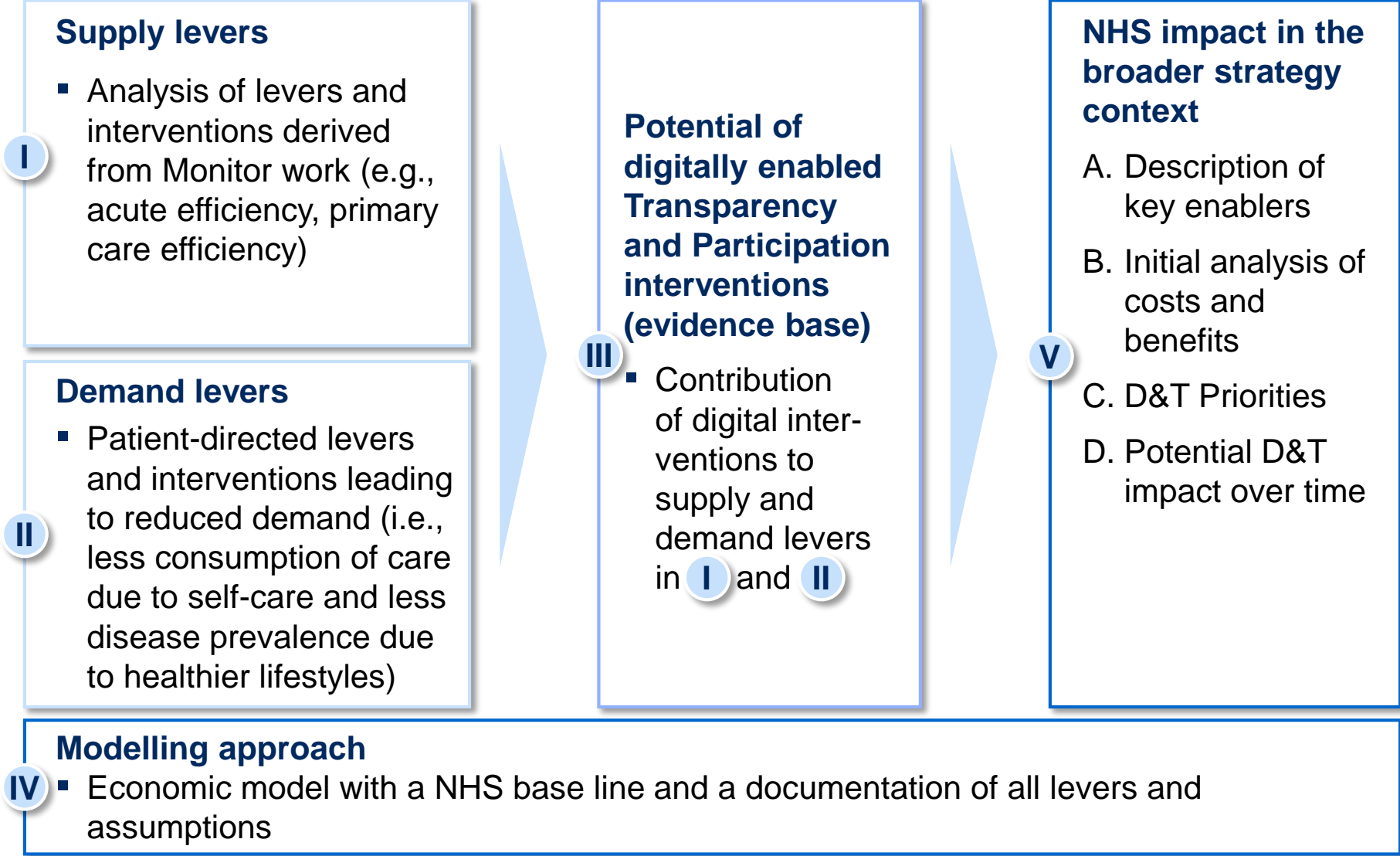


Use risk stratification to direct resources efficiently

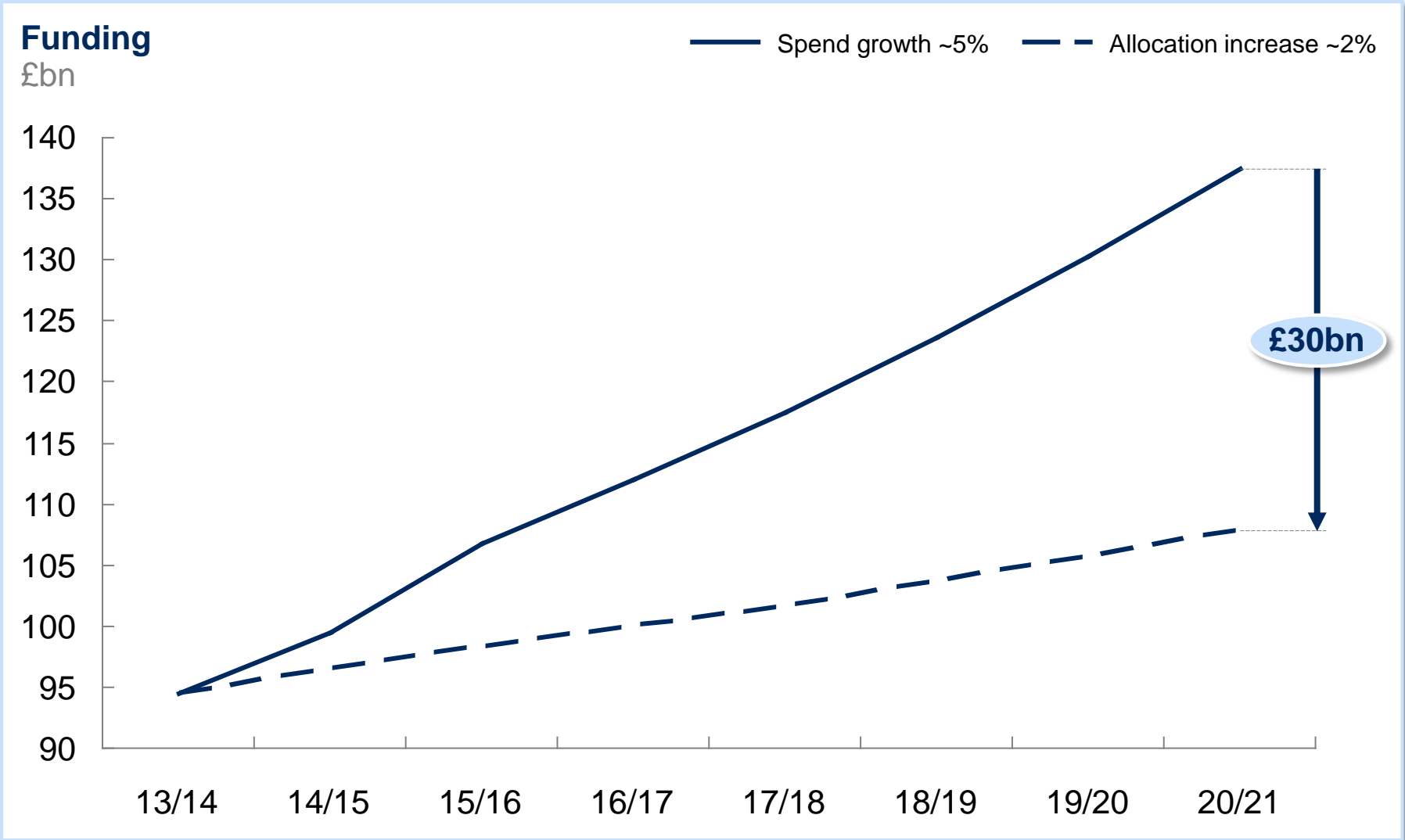


Others?

# We have applied the following methodology to estimate the potential of digitally enabled transparency and participation



# This work is set in the context of the NHS facing a serious funding gap



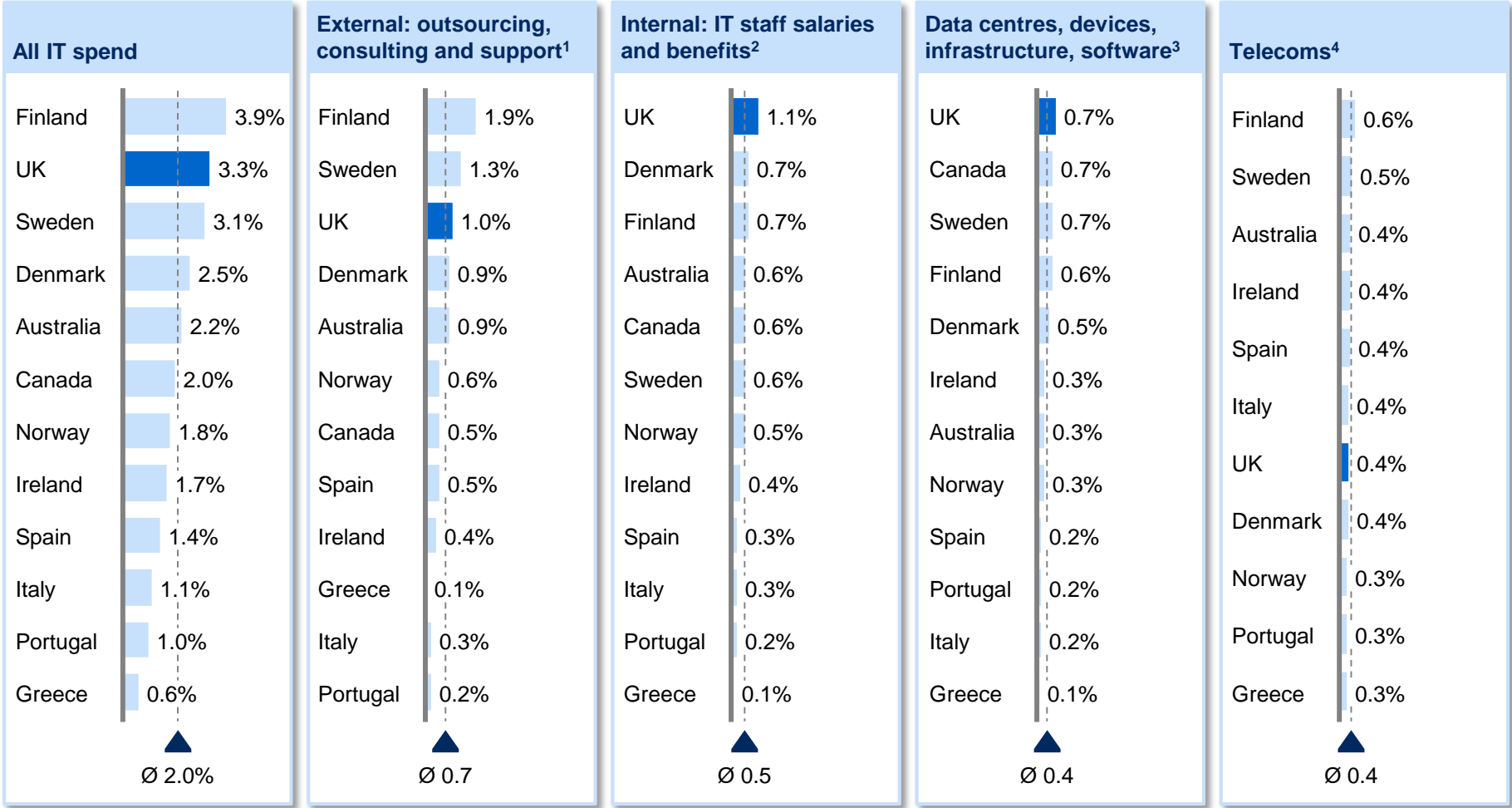
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# The IT expenditure in the NHS has been relatively high

-- Average

Spend on IT by providers as a percentage of total healthcare expenditure, 2011

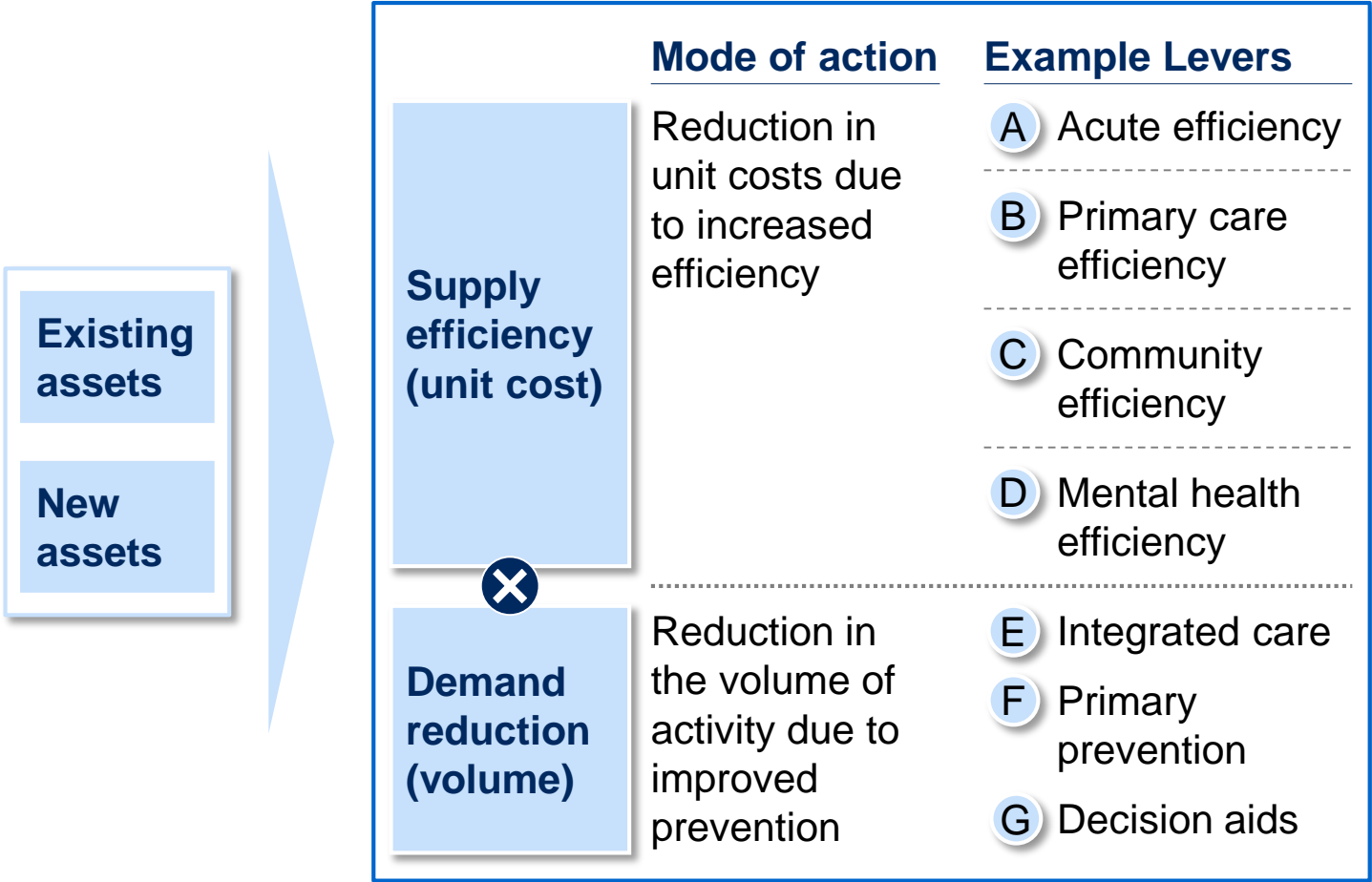


1 Consulting, implementation, IT outsourcing and business process outsourcing, software and hardware support  
 2 Salaries and benefits paid to the information services staff of an organisation  
 3 Data centres, devices, and enterprise applications, infrastructure, and industry-specific software  
 4 Fixed network services and mobile services.

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# We are modelling the opportunity to use the NHS IT assets better in supply efficiency (unit costs) and demand reduction (volume)



# Net benefit of technology interventions across settings

Net benefits, 2020/21, £bn unless indicated<sup>1,4</sup>

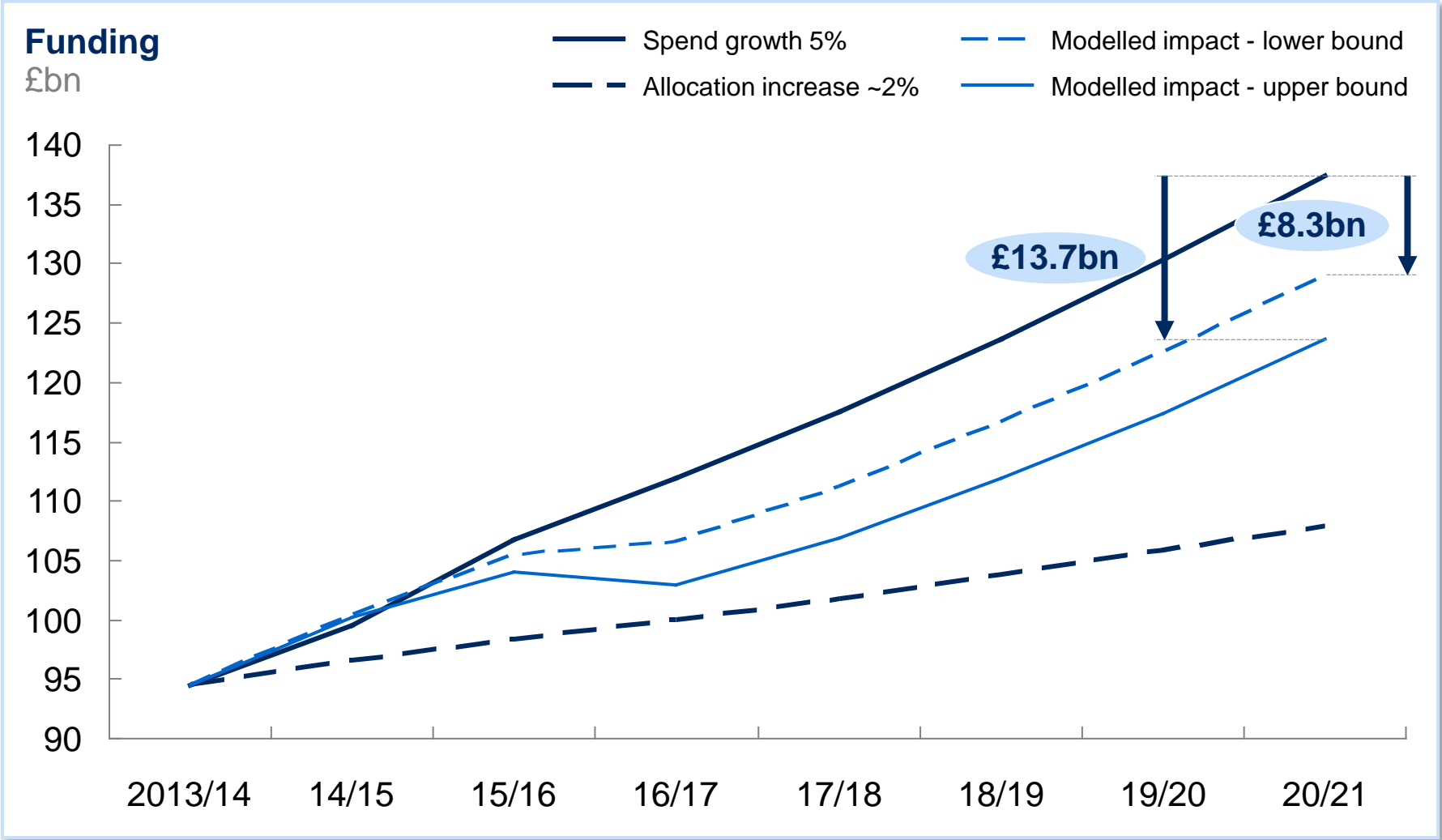
Total spend	Acute Care	Primary Care	Community Care	Mental Health	Total
	<b>£67bn</b>	<b>£31bn</b>	<b>£14bn</b>	<b>£15bn</b>	<b>£127bn</b>
<b>Supply efficiency levers (reduce unit costs and drive quality and safety)<sup>2</sup></b>	<b>Acute efficiency<sup>1</sup></b> <ul style="list-style-type: none"> <li>EHR (£0.6-1.1bn)</li> <li>Digital lean:                             <ul style="list-style-type: none"> <li>– Patient flow management (~£0.8bn)</li> <li>– Barcoding (up to £0.4bn)</li> <li>– RFID (~£0.2bn)</li> <li>– Procurement (~£0.3bn)</li> <li>– e-Rostering (~£0.2bn)</li> </ul> </li> <li>Doctor performance transparency tools<sup>3</sup> (£1.0-1.1bn)</li> <li>Electronic booking and reminders (£0.2bn)</li> <li>Vital sign tracking (£0.2-0.3bn)</li> <li>Remote monitoring (£0.2bn)</li> </ul>	<b>Primary Care efficiency<sup>1</sup></b> <ul style="list-style-type: none"> <li>E-triage, telephone triage, teleconsultations and physician web messaging (£0.7 -1.8bn)</li> <li>EHR incl . e-prescriptions (£0.3-0.9bn)</li> <li>Online booking (£0.1bn)</li> </ul>	<b>Community care efficiency<sup>1</sup></b> <ul style="list-style-type: none"> <li>Mobile working (£0.8-1.1bn)</li> <li>EHR (£0.1-0.4bn)</li> <li>Centralised booking system (~£0.3bn)</li> <li>Geographic assignment of patients and routes (£0.1-0.2bn)</li> <li>E-rostering (~£0.1bn)</li> <li>Procurement (~£0.1bn)</li> </ul>	<b>Mental health efficiency</b> <ul style="list-style-type: none"> <li>EHR (£0.2-0.4bn)</li> <li>Centralised electronic booking (£0.1-0.2bn)</li> <li>ICT-based or facilitated interventions (£0.03-0.1bn)</li> <li>E-rostering (~£0.1bn)</li> <li>Self-care; Electronic monitoring of patients mood (£0.1-0.3bn)</li> <li>Procurement (~£0.1bn)</li> </ul>	
	<b>£3.2-3.9bn</b>	<b>£1.2-2.8bn</b>	<b>£1.4-2.2bn</b>	<b>£0.7-1.3bn</b>	<b>£6.5-10.3bn</b>
<b>Demand levers (reduce volume and drive quality and safety)<sup>2</sup></b>	<b>E Integrated care and screening</b>				
	<b>£2.1-4.2bn</b>	<b>(£0.4)-(0.9bn)<sup>3</sup></b>	<b>(£0.4)-(0.8bn)<sup>3</sup></b>	<b>n/a</b>	<b>£1.3-2.5bn</b>
	EHR    Teleconsultations	Remote monitoring	Automated reminders	Behaviour tracking apps	E-learning portals
	<b>F Primary prevention</b>				
	<b>£0.3-0.5bn</b>	<b>£0.1-0.3bn</b>	<b>£0.07-0.12bn</b>	<b>n/a</b>	<b>£0.5-0.9bn</b>
	Automated reminders	Remote consultations	Incentive programmes	Behaviour tracking apps	
<b>Total net benefit</b>	<b>£5.6-8.7bn</b>	<b>£0.9-2.2bn</b>	<b>£1.1-1.5bn</b>	<b>£0.7-1.3bn</b>	<b>£8.3-13.7bn</b>

1 Values for individual interventions are duplicative, in the total this duplication has been removed and hence the interventions do not sum above to the total. They represent the potential of the intervention if it were done in isolation. They therefore also are not calculated here on the basis of reduced volumes in the future from the demand management levers, whereas the totals are 2 21/22 supply savings made on new demand baseline after demand reductions taken into account

3 Negative numbers represents the investment (i.e., "costs") needed to make the savings in the acute sector by investing in primary and community services. They are represented here for completeness but could also be argued to sit as savings to commissioners that are reinvested.

4 Figures may not add up exactly due to rounding

# The gap may be reduced by ~30% by applying the interventions



# We have analysed the net opportunity against the ease of implementation

<ul style="list-style-type: none"> <li>• <b>High difficulty high saving</b></li> <li>• EHR Acute care</li> <li>• Transparency on clinician performance Acute care</li> <li>• Patient flow management Acute care</li> <li>• Integrated care as a whole</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Medium difficulty high saving</b></li> <li>▪ EHR Primary care</li> <li>▪ Physician web messaging Primary care</li> <li>▪ Electronic/telephone triage Primary care</li> <li>▪ Teleconsultations Primary care</li> <li>▪ Mobile working Community</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Low difficulty high saving</b></li> <li>▪ Outpatient teleconsultations Acute care</li> </ul>	<p>&gt;0.31bn</p>	
<ul style="list-style-type: none"> <li>• <b>High difficulty medium saving</b></li> <li>• Smoking Primary prevention</li> <li>• Obesity Primary prevention</li> <li>• Alcohol Primary prevention</li> <li>• HBP &amp; LDL Primary prevention</li> <li>• EHR Community, Mental Health</li> <li>• Transparency Mental Health</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Medium difficulty medium saving</b></li> <li>• Bar-coding Acute care</li> <li>• RFID Acute care</li> <li>• Vital sign tracking Acute care</li> <li>• Decision aids Acute care</li> <li>• Physician web messaging Primary care</li> <li>• Geographic assignment of patients and routes Community</li> <li>• Self-care; Electronic monitoring of patients' mood Mental Health</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Low difficulty medium saving</b></li> <li>▪ E-rostering Acute care, Community, Mental health</li> <li>▪ Procurement Acute care</li> <li>▪ Electronic booking and reminders Acute care, Community, Mental health</li> <li>▪ Remote monitoring Acute care</li> <li>▪ Online booking Primary care</li> </ul>		<p>0.08-0.31bn</p>
<ul style="list-style-type: none"> <li>• <b>High difficulty low saving</b></li> <li>• Referral management Acute</li> <li>• Transparency Community</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Medium difficulty low saving</b></li> <li>• A&amp;E triage Acute care</li> <li>• RFID community</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Low difficulty low saving</b></li> <li>• E-referrals Primary care</li> <li>• Booking reminders Primary care</li> <li>• Sexual health Primary prevention</li> <li>• Procurement Community, Mental Health</li> <li>• ICT-based or facilitated interventions Mental Health</li> </ul>		<p>&lt;0.08bn</p>

**Net opportunity**

Ease of implementation

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## There are a number of enabling actions that could be pursued, we identify the following four as the most impactful enabling actions

- 1) A programme of **joint working** between major arms-length bodies to incorporate a **consistent set of incentives** into their key decisions to enable adoption of the most impactful data and information interventions
- 2) As part of this, **NHS England** to review what incentives it can put in place to enable adoption and cultural change across the system, particularly with regard **primary care** and done with appropriate partners e.g., CQC.
- 3) Launch a **communications** exercise to make local decision makers, both commissioners, providers and clinicians aware of the potential impact of data and information as well as engagement with the wider technology industry on solution development
- 4) Establish a comprehensive **implementation pilot** for a single region as a reference point for wider system, look to fully digitise the system, implementing most impactful interventions across all providers



# BACKUP

# We estimated the potential benefits in supply...

Lever	High level findings	Potential impact based on 2020/21 baseline	Confidence (baseline scenario) based on weighted evidence assessment
<b>A Acute efficiency</b>	<ul style="list-style-type: none"> <li>▪ The interventions with the largest potential and relatively strong-medium evidence impact include                             <ul style="list-style-type: none"> <li>– EHR: while single-provider benefits can yield efficiency savings, further benefits may be driven via data sharing between providers incl. in integrated care</li> <li>– Digital lean tools e.g. e-rostering, bar-coding/RFID, procurement and patient flow management tools. Patient flow management tools may require linkage to EHR for optimal functionality.</li> </ul> </li> <li>▪ Doctor performance transparency tools, combined with a strong culture of accountability, have a potential to reduce LOS and readmissions. These tools may be linked to data in the EHR to maximise benefits.</li> <li>▪ Remote monitoring equipment in ICU (“eICU”) as well as in the patient’s home has the potential to improve quality, avoid complications, allow early discharge and hence reduce length of stay</li> <li>▪ Electronic booking and reminders reduce DNAs and increase administrative efficiency</li> <li>▪ Telephone outpatient appointments increase efficiency</li> </ul>	£3.2-3.9bn	
<b>B Primary care efficiency</b>	<ul style="list-style-type: none"> <li>▪ Large potential benefit is achievable primarily via channel shift                             <ul style="list-style-type: none"> <li>– Avoided GP consultations and home visits via e-triage, telephone triage, physician web messaging and teleconsultations may lead to substantial benefits</li> <li>– Relatively more modest benefits are estimated in online booking</li> </ul> </li> <li>▪ EHR: given the wide market penetration of the basic record functionality, some of this benefit may have already been realised; However, more advanced functionality e.g. e-prescribing has been rolled out less broadly. Additionally, interoperability and data sharing with other providers e.g. acute sector, will drive further benefits incl. in integrated care</li> <li>▪ While it is envisaged that data transparency may have benefits for patient care direct evidence for economic impact has not been found</li> </ul>	£1.2-2.8bn	
<b>C Community efficiency</b>	<ul style="list-style-type: none"> <li>▪ The interventions with the largest potential are                             <ul style="list-style-type: none"> <li>– Mobile working solutions to increase the administrative efficiency and reduce travel</li> <li>– EHR to increase administrative efficiency, remove duplication and reduce unnecessary appointments and tests</li> <li>– Electronic booking and reminders to reduce DNAs and reduce admin</li> </ul> </li> </ul>	£1.4-2.2bn	
<b>D Mental health</b>	<ul style="list-style-type: none"> <li>▪ The key areas of opportunity are expected to be in                             <ul style="list-style-type: none"> <li>– EHR</li> <li>– Remote mental health interventions (e.g. computerised CBT) and self-care</li> </ul> </li> </ul>	£0.7-1.3bn	

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Lever	High level findings	Potential impact based on 2020/21 baseline	Confidence (baseline scenario) based on weighted evidence assessment
<b>E</b> <b>Integrated care and screening</b>	<ul style="list-style-type: none"> <li>▪ Major impact is assumed from integrated care and less significant from early detection of disease</li> <li>▪ Interventions discussed widely in the literature include interoperable EHR systems, telehealth interventions and SMS reminders</li> <li>▪ Literature does not test the impact of EHR on the benefits of integrated care directly but information sharing between providers is consistently quoted as a key enabler</li> <li>▪ The evidence on telehealth is mixed: some studies (e.g. Airedale) have demonstrated a significant impact on LOS reduction and A&amp;E attendances while others have failed to do so. It should be noted that telehealth is a broad term covering, among others, 24/7 tele-access to a healthcare professional (e.g. Airedale). Remote monitoring has been found to have strongest evidence amongst cardiac patients and the impact has been captured in acute efficiency. It should be noted that the running costs and potentially upfront investments in telehealth may be relatively large, depending on the details of the implementation and the technology used.</li> <li>▪ Emerging interventions with currently limited evidence include apps and online information portals</li> <li>▪ In integrated care the full potential of the lever was attributed to digital; information sharing is considered a necessary but not sufficient element. Non-digital costs were accounted for, including required reinvestments in primary and community care</li> </ul>	£1.3-2.5bn	
<b>F</b> <b>Primary prevention</b>	<ul style="list-style-type: none"> <li>▪ The sub-levers include reducing obesity, smoking, alcohol abuse, hypertension and high cholesterol, and improved sexual health screening</li> <li>▪ Interventions with evidence backing include SMS reminders, computerised CBT for some addictions (smoking, alcohol) and incentive schemes</li> <li>▪ Other emerging interventions include apps and online information portals</li> <li>▪ These interventions have a relatively long time to impact as the benefits of the interventions on health outcomes may take a long time to demonstrate (e.g. lung cancer in smokers)</li> <li>▪ The evidence is relatively weaker than in some of the other levers. This is due to the additional assumptions on uptake of healthy living programmes in the population and the relative scarcity of longitudinal studies linking digital programmes to encourage healthy living to long term impact e.g. on lung cancer rates. Further development of evidence base and evaluation of interventions would be desirable.</li> </ul>	£0.5-0.9bn	



# Technology investment

£bn unless indicated<sup>1</sup>

One off technology investment  
2015

Total spend	Acute Care	Primary Care	Community Care	Mental Health	Total
	<b>A</b> £67bn	<b>B</b> £31bn	<b>C</b> £14bn	<b>D</b> £15bn	£127bn
Supply efficiency levers (reduce unit costs and drive quality and safety) <sup>2</sup>	<b>Acute efficiency<sup>1</sup></b> <ul style="list-style-type: none"> <li>EHR (£0.96bn)</li> <li>Digital lean:                             <ul style="list-style-type: none"> <li>Barcoding (£0.25bn)</li> <li>RFID (£0.34bn)</li> <li>Procurement (£0.07bn)</li> <li>Patient flow management (£0.14bn)</li> <li>e-Rostering (£0.07bn)</li> </ul> </li> <li>Electronic booking and reminders (£0.1bn)</li> <li>Vital sign tracking (£0.04-0.08bn)</li> <li>Remote monitoring (£0.04bn)</li> </ul>	<b>Primary Care efficiency<sup>1</sup></b> <ul style="list-style-type: none"> <li>EHR incl. e-prescriptions (£0.4bn)</li> </ul>	<b>Community care efficiency<sup>1</sup></b> <ul style="list-style-type: none"> <li>EHR (£0.15-0.19bn)</li> <li>Mobile working (£0.10-0.13bn)</li> <li>Centralised booking system (£0.07bn)</li> <li>Geographic assignment of patients and routes (£0.03-0.05bn)</li> <li>E-rostering (£0.02-0.03bn)</li> <li>RFID (£0.03bn)</li> <li>Procurement (£0.08bn)</li> </ul>	<b>Mental health efficiency</b> <ul style="list-style-type: none"> <li>EHR (£0.19-0.24bn)</li> <li>Centralised electronic booking (£0.07bn)</li> <li>E-rostering (£0.02-0.03bn)</li> <li>Self-care; Electronic monitoring of patients mood (£0.01bn)</li> <li>Transparency (£0.01bn)</li> <li>Procurement (£0.08bn)</li> </ul>	
		£2.0-2.1bn	£0.4bn	£0.5-0.6bn	£0.4bn
Demand levers (reduce volume and drive quality and safety)	<b>E Integrated care and screening<sup>1</sup></b>				
	£73m	£31m	£13m	£16m	£0.1bn
	EHR    Teleconsultations	Remote monitoring	Automated reminders	Behaviour tracking apps	E-learning portals
	<b>F Primary prevention</b>				
	n/a	£0.5bn	n/a	n/a	£0.5bn
	Automated reminders	Remote consultations	Incentive programmes	Behaviour tracking apps	
Total one off tech investment	£2.1bn	£0.9bn	£0.5-0.6bn	£0.4bn	£3.8-4.1bn

<sup>1</sup> One off technology investment costs in integrated care and screening split across supply levers proportional to total supply side investment in EHR

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# Technology investments and running costs

ROUNDED

£m

	Initial technology investment	Initial training and adoption investment		Total upfront investment	Running costs 20/21
		Training costs	Adoption costs		
<b>Acute</b>	2,020-2,070	310	170	2,490-2,540	580-710
<b>Primary</b>	420	80	350	860	200
<b>Community</b>	460-560	40	10	510-610	150
<b>MH</b>	360-430	30	10	400-460	160-250
<b>Integrated care</b>	130	30	70	200	890-1820
<b>Primary prevention</b>	460	20	60	540	100
<b>Total</b>	<b>3,850-4,060</b>	<b>520</b>	<b>670</b>	<b>5,000-5,200</b>	<b>2,300-3,010</b>

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# Training and adoption costs

£m

ROUNDED

		Investment		
		1	2	
		Local training investment (£m)	Local adoption investment (£m)	Total change costs (£m)
Supply levers	Acute efficiency	310	170	480
	Primary care efficiency	80	350	430
	Community efficiency	40	10	50
	Mental health efficiency	30	10	40
Demand levers	Long term conditions & screening	30	70	100
	Primary prevention	20	60	80
<b>Total</b>		<b>520</b>	<b>670</b>	<b>1,180</b>

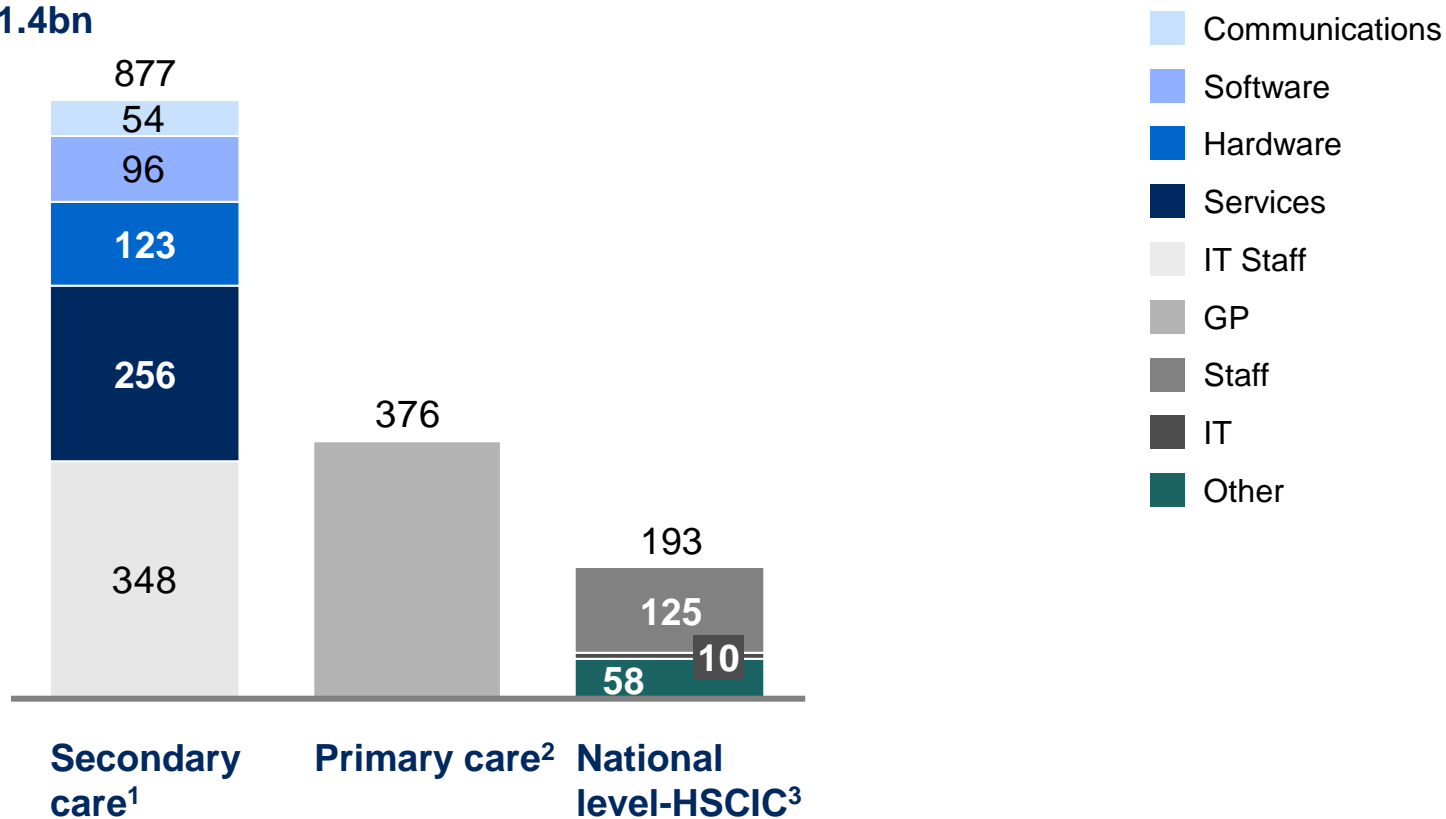
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# Significant investment has already been made in IT in NHS England; the question is how to ensure the benefits are captured

IT spend, £m, 2011-12

Total: £1.4bn



1 Acute Trusts with specialised and community care, Mental health trusts

2 GP practice including clinical systems and admin services (estimate)

3 Former DH's Informatics Directorate and CfH 'Connecting for Health' (successor of 'National Programme for IT'); HCS IC (Health and Social Care Information Centre), Some local informatics functions from former SHAs, Data Management Integration Centres 'Connecting for Health' (CfH) is a successor of 'National Programme for IT' (NPfIT) and was part of Informatics Directorate

# We recommend the following next steps to ensure the digital agenda is embedded in the NHS (1/4)

Across themes  
(i.e., Mental health, community acute, primary care, prevention)

	Recommendation	Example	
		From	To
1	<b>Increase funds available for the Tech Fund either by consolidating funding or increase total available, strengthen criteria and benefits framework</b>	Medium strength requirements	Stringent requirements e.g. requirement to demonstrate achievement of efficiency gains as a condition of full award receipt
2	<b>CQC to include data quality and use as part of reviews</b>	Inconsistent data quality checking	Include data completeness and quality as part of automated surveillance checks; also inspect and comment on effective use of data
3	<b>Create a tariff strategy to reflect shift to digital channels</b>	No digital tariff	Specific tariff for remote OP appointments, tele-consultation in care homes, remote primary care appointment monitoring.
4	<b>Launch a productivity programme underpinned by digital e.g. via IQ resource</b>	No specific digital-enabled productivity programme	Robust and widely rolled out programme driving digital in acute
5	<b>Create an engagement strategy to support increased adoption by clinicians</b>	Lack of knowledge on tools that may drive adoption	A strategy to overcome key barriers to change and e.g., professional programmes developed collaboratively with the Royal Colleges
6	<b>Strengthen information governance by creating a clear set of rules and standards around data</b>	Information governance unclear and restrictive	Information governance simple and enabling for integrated data
7	<b>Deaneries to set digital standards required for training</b>	No requirements for digital standards	Specify requirements for training e.g., computerised scheduling,

# We recommend the following next steps to ensure the digital agenda is embedded in the NHS (1/4)

	Recommendation	Example	
		From	To
Acute efficiency	8 Review the standard acute contract and incorporate digital requirements	Limited digital related requirements	e.g. requirements for all patient-related data to be linked to the NHS number, data sharing with other providers
	9 Specify digital elements of both financial and clinical failure regimes	No digital requirements	e.g. implementation of digital lean solutions (e-rostering, supply chain management, procurement)
	10 Create toolkit and central resource to support hospitals in their procurement	Mixed ability of trusts to procure value for money digital solutions	Easy access to procurement support
	11 Create an engagement strategy to support increased adoption by clinicians	Lack of knowledge on tools that may drive adoption	A strategy to overcome key barriers to change and e.g., professional programmes developed collaboratively with the Royal Colleges

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# We recommend the following next steps to ensure the digital agenda is embedded in the NHS (2/4)

	Recommendation	Example	
		From	To
Primary care efficiency	<b>12 Introduce conditionality into GP SoC to implement digital solutions as part of the contract</b>	An inconsistent approach to driving digital in primary care	E.g. requirement for funds to roll out e-prescribing, data sharing among all providers, online booking and test/lab results viewing, facility for teleconsultations, automatic repeat prescriptions
	<b>13 Change GP contract to include requirement for the provision of digital services and link QOF rewards to uptake</b>	Contract has limited requirements for digital channels	E.g. requirement for each GP practice implement EHR fully, including e-prescribing, data sharing among all providers, online booking and test/lab results viewing, facility for teleconsultation, automatic repeat prescriptions
	<b>14 Create toolkit to help GP practices drive adoption of digital among patients</b>	Limited help with understanding how to increase adoption of digital channels	E.g. a toolkit to drive adoption including potentially using patient navigators to signpost digital channels, e-triage embedded in the online booking system and reducing availability of non-digital channels

# We recommend the following next steps to ensure the digital agenda is embedded in the NHS (3/4)

	Recommendation	Example	
		From	To
Integrated care	<b>15 Create a commissioning strategy for high potential digital solutions that require scale for economic benefits</b>	Local subscale examples of success (e.g. Airedale)	Scaled solutions e.g. regional
	<b>16 Make disbursement of the Better Care Fund conditional on the implementation of digital technology</b>	TBD	Digital requirements clearly specified e.g. data sharing, availability of teleconsultations for LTC patients
	<b>17 Support CCGs in the development of reimbursement schemes to incentivise integrated care</b>	PbR and block payments	E.g. capitated payments or payment for results
Primary and self care (Cont.)	<b>18 Accelerate development and adoption of lifestyle support/behaviour change tools</b> <ul style="list-style-type: none"> <li>▪ National testing and certification</li> <li>▪ Promotion of adoption of apps validated elsewhere</li> <li>▪ Incentives for clinician engagement</li> </ul>	A broad set of tools not utilised to the full potential	Significantly increased adoption of primary prevention digital tools
	<b>19 Develop motivational segmentation/activation profiling of the population, validate routine measurement and embed into commissioning and delivery</b>	Whole population approaches	Targeted approaches tailored for different motivational segments

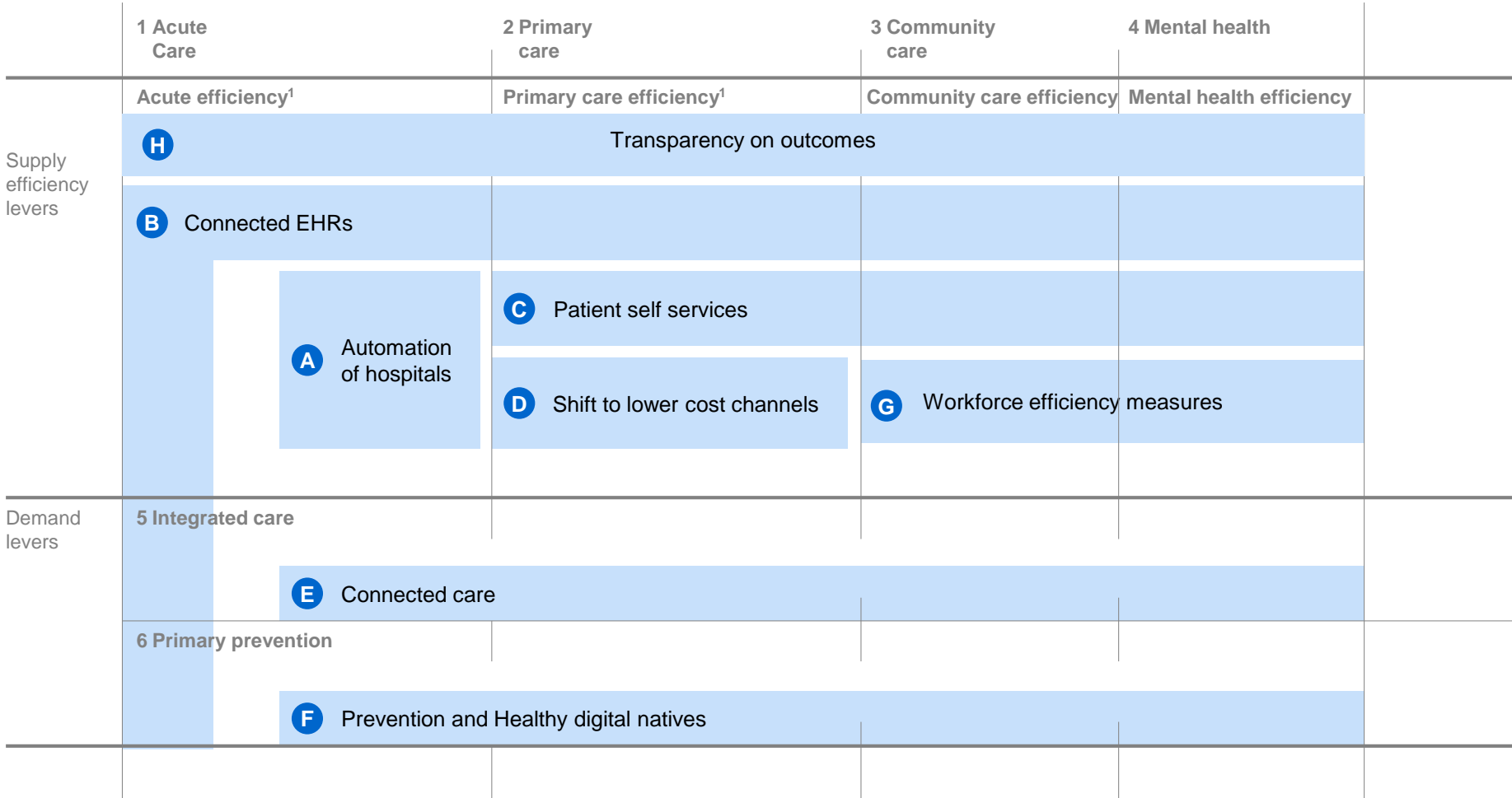


# We recommend the following next steps to ensure the digital agenda is embedded in the NHS (4/4)

Recommendation	Example	
	From	To
20 Promote development and uptake of lifestyle incentive schemes by convening NHS and private sector players	Subscale, non-viable local efforts and a reticence to engage with incentives	A national effort at scale ensuring viable economics
21 Strengthen ability to identify and target interventions at risk individuals, using 'big data' approaches combining behavioural with socio-demographic data	General population-level approaches with limited cost-benefit	Targeting of interventions at micro level, e.g. individual high-risk families
22 Identify opportunities to accelerate deployment of 'nudge'-type approaches in the enabling environment using digital technology	Costly population-level campaigns with limited impact on behaviours	Cost-effective changes e.g., to defaults which deliver rapid and sustainable change

Prevention and self care (Cont.)

# The digital interventions define the 8 “digital moves”



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