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Is “Integrated Care” the answer?

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Agenda

- What is integrated care?
- What does it mean in practice
- What does the evidence say – clinical, cultural, organisation, financial?
- Risk stratification and regression to the mean in healthcare
- Financial RoI model – an NHS case study in detail

What is integrated care?

- "*For health, care and support to be 'integrated', it must be person-centred, coordinated, and tailored to the needs and preferences of the individual, their carer and family". NHS England, 2013*
- *The overarching approaches to integrating care is to improve outcomes especially for those with (complex) chronic health problems by overcoming issues of fragmentation through linkage of services of different providers along the continuum of care. Ultimately, integrated care initiatives aim to drastically change or continue to change the focus of healthcare systems from 'the episodic treatment of acute illness' events to the provision of a coordinated continuum of services that will support those with chronic conditions and enhance their health.* (Ling and others, 2010)

Integrated Care - in practice

- More collaborative interaction between different institutions (vertical between primary care and secondary care) and horizontal (between primary, community and social care)
- More proactive, tailored and co-ordinated multidisciplinary clinical care (case management, risk stratification, evidence-based clinical protocols). Usually involves setting up multidisciplinary “teams” – real or virtual
- Providing information to clinicians and patients
- Using financial arrangements and contracting to incentivise more co-ordination between different providers (prime contractor, capitation etc)
- Basic hypothesis can be summarised as “more primary care co-ordination will lead to fewer expensive, inappropriate hospital admits”

What does the evidence say?

Integrated Care Critical Success Factors[1]

Factor	Facilitators	Barriers
Leadership from top management	• Clear consistent communication, efforts to engage all stakeholders and regular progress updates	
Supportive Organisational Culture	• Shared values • Staff feeling able to take risks	• Perceived professional boundaries • Changes in professional roles • Public service bureaucracy
Data infrastructure and information systems	• Effective data linkage or alternative ways to exchange information	• Systems which conflict between partner organisations or where data sharing is not possible
Previous involvement in quality programmes	• Previous existing relationships or formal partnership between participating organisations	
Physician involvement	• Clinical leadership	• GPs reluctant to engage
Micro-system motivation to change	• Individual staff feel personal benefit in changing work patterns • Share understanding of concept • Common belief in value of initiative	
Resources	• Training for new roles or skills	• Staff cuts • Reduced budgets • Short time scales
Team Leadership	• Champions – staff members who support and communicate benefits at team level	

[1] Kaplan et al.2010

Integrated Care Critical *Financial* Success Factors

- Data sharing/information flows importance cannot be over-emphasized
  - Information flowing into the team from multiple sources (access to systems)
  - Information collected within the team – standardised collection of activity data to enable measurement against benchmarks and progress
  - Information flowing out to other organisations (acute, ambulance etc.)
- Financial incentive alignment/shared budgets and rewards for those integrated care teams that achieve benchmarks
  - Financial rewards aligned to clinical outcomes, which again relies on robust information/data
  - Accountability for financial outcomes with the decision-makers
- Clarity of purpose around clear goals, e.g.:
  - We aim to reduce emergency admissions by x% and reduce excess beddays due to delayed discharge by y% measured against clear baseline NOT

    "we aim to make patient's lives better".

Integrated Care Critical *Financial* Success Factors

- Standardised protocols:
  - Criteria for acceptance into integrated care programme
  - Robust assessment process, followed consistently
  - Clear “discharge from programme” criteria
- Narrow target population and scope of intervention
  - Multiple target populations dilute focus
  - Wide scope of intervention allows too much variation
  - The key to RoI is not widening the pool of intensively-managed people too far
- Ability to offer alternative to calling 999
  - Not just 9 to 5 Monday to Friday, but 7 days a week, 24 hours a day
    - Access to care co-ordinator
    - Access to GP as alternative to hospital admission

Integrated Care Critical *Financial* Success Factors

- Short term measureable financial savings usually come from:
  - Reduced A&E visits which in turn lead to
  - Reduced emergency admissions
  - Reduced ALOS in acute settings as fewer delayed discharges
  - Fewer residential care placements, as more people are supported to stay at home (evidence from Torbay)
- Longer term may see some savings from helping people stay in a “healthier” state, but little evidence of that in the literature
  - Unlikely in the UK to be sufficient to offset rising population of over 65s, plus increasing prevalence of multiple long term conditions

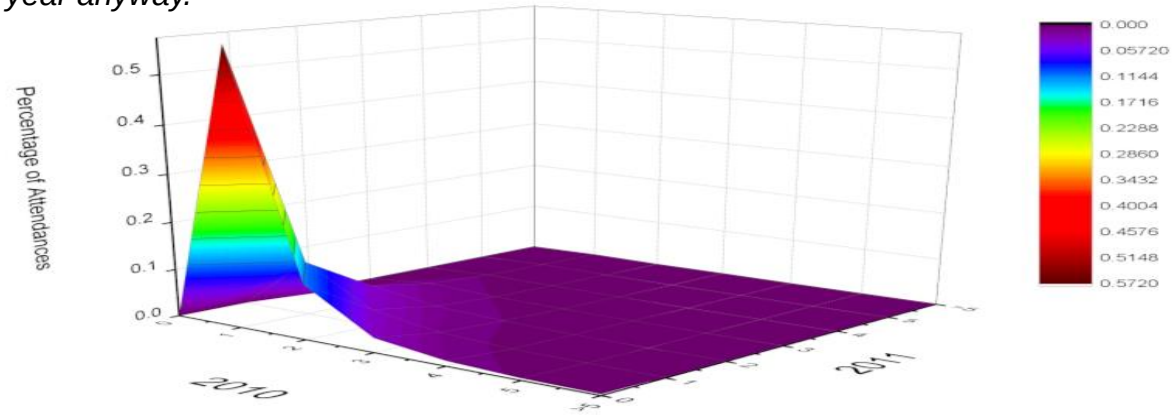
Risk stratification

- Can only take you so far
- Predictive value depends heavily on the quality of the data and:
  - Tools which rely solely on hospital data tend not to have great predictive value
  - Tools which integrate primary care and prescription drug data sets tend to have more predictive value and are much more stable over time
- Needs intelligent application
  - If followed slavishly, wastes a lot of resource on people who were high service users one year but will not be the next year
  - Useful to get first cut of people ***likely*** to be high risk – so to segment your population down to something manageable
    - Answers this *question* ***"is a group of people with certain characteristics higher or lower risk of medical costs than another group with different characteristics?"***
    - Does not answer this question: ***"will Mrs Smith or Mrs Jones require hospital admission next year?"***

Risk stratification & predictive modelling: the perils of Regression to the Mean

- *Based on A&E attendees for over 65s at a large NHS hospital. Demonstrates that the majority of attendees in the base year (2010), have zero attends the next year (2011). Even people who attend 2 or more times in 2010, were around 50% more likely to have zero attends in 2011 than 1 or more A&E visit.*

- *Only around 1 in a 100 people have 5+ visits in one year and of those only 1 in 10 will go onto have 5+ visits the following year (so 0.1% of people have 5+ over both years). These people are easily found by risk stratification. But you only want to intensively manage the 1 in a 1,000, not the other 9, because most of those will have lower costs the following year anyway.*



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NHS Case study – integrated care programme

Element	Potential for Reduced Health Costs?	Potential for Reduced Social Care Costs?	Comments
Staying healthy – maintaining independence by proactively supporting frail/elderly people to keep well and reduce risk of deterioration	• Maybe – little evidence to support	• Maybe	• Unlikely to have significant financial impact in the short to medium term
Proactive community care – Proactively identifying and supporting frail/elderly people and their carers who are at the greatest risk to prevent deterioration: co-design of agreed and shared contingency plan with baseline medical stats	• Yes	• Unlikely	• Effective if includes things like avoiding hospital admissions for end of life care • Would be much more effective if team available for longer hours
Admission avoidance – proactively avoiding all inappropriate admissions to hospital by: Providing comprehensive clinical geriatric review in the community for those over 65 alongside safe, robust community care. A comprehensive clinical review where appropriate .	• Yes, if review is updated regularly and available via information sharing services • Gives ambulance staff an alternative to transportation to hospital	• Unlikely	• Effective if includes things like avoiding hospital admissions for end of life care • Would be much more effective if MDT available for longer hours • Issue with managing self-funders of social care and educating care homes for complex patients?
In-hospital care – proactively ensuring that frail/elderly people requiring admission to hospital receive holistic and high quality care that is fully informed by the patient and carer's health and social care needs.	• Not as currently set up with intermittent links between community and acute,. Potential for significant health cost savings	• Likely to increase social care costs?	• Not always told when patients discharged – haphazard communication. • Requires member of case management team to be onsite at acute to facilities discharge and reduce ALOS
Discharge to assess – by linking into existing discharge teams to proactively ensure that frail / elderly people only stay in an acute hospital when they require a 24/7 specialist service, and once medically stable they are discharged	• As above – links need to be much better, with team resources on site at acute. But potential for significant health cost savings	• Likely to increase social care costs?	• Depends on starting point, but we believe should be savings if done effectively, but requires more case management resource
Maintaining independence – proactively supporting frail / elderly people and their carers to self care and remain independent	• Unlikely	• Maybe	• Similar to (1) above "Staying healthy"

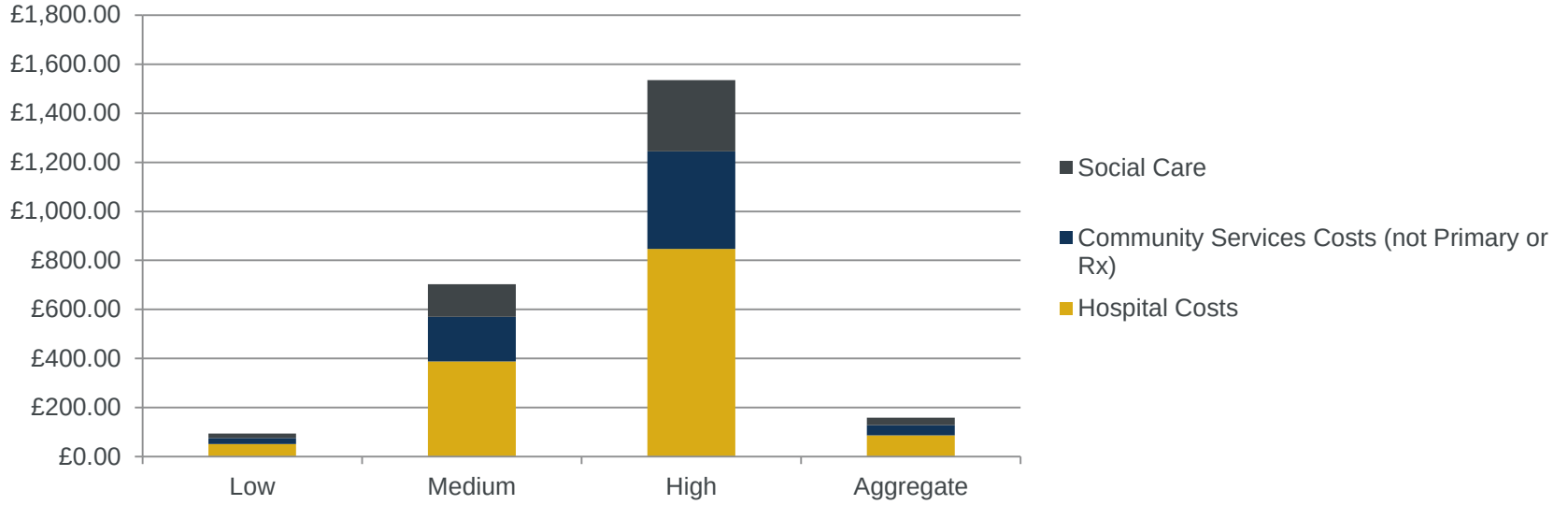
Data

- Hospital utilisation and costs by type of service, age group and sex for over 65s, stratified into High, Medium and Low risk groups as a proxy for Risk Stratification effects, for FY 11/12, 12/13 and part year 13/14
- Social care costs for financial years 12/13 and 13/14, stratified by type of service, age group and sex
- Community care costs in total, split by type of service
- We did not receive any data on primary care costs or prescription drug utilisation or costs and we have not modelled these
- We relied on Milliman's internal US benchmarks for over 65s populations, based on Loosely Managed and Well Managed health systems
- We also relied on UK social services data showing relative activity for residential and domiciliary care services in Torbay for 13/14

Broad Overview of Methodology

- Actuarial cost model for three risk groups (High, Medium & Low, based on hospital costs over three years)
- Each one has a profile by age/sex that changes over time, according to the changes in population mix
  - Projection allows for this changing demographic mix
  - So, for base scenario, we assume “high” risk are the people who are in the top 1% of the population by hospital costs, and that 1% stays constant, so the number of people increases (we calculate exact proportions by age and sex to allow for ageing within each risk category).
- To illustrate main effects, we will look at changes to each service category in the cost model affected by programme
  - Emergency admissions
  - A&E attends
  - Social care/residential placements
  - Treatment effects of programme identified from benchmarking, internal Milliman data and literature

Historic Analysis: FY 13/14 Per Person Per Month Cost estimates by risk category (over 65s)



Low Risk Population	Medium Risk Population	High Risk Population
108,000	10,000	1,000

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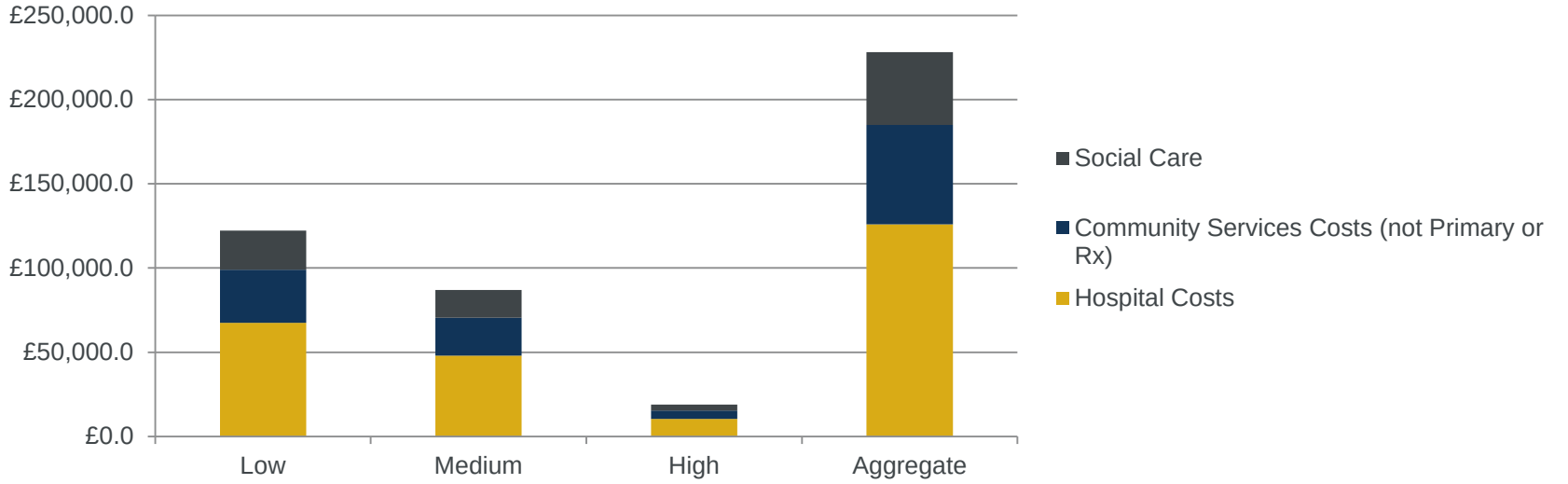
Historic Analysis: FY 13/14 total cost estimates by risk category (£m) (over 65s)

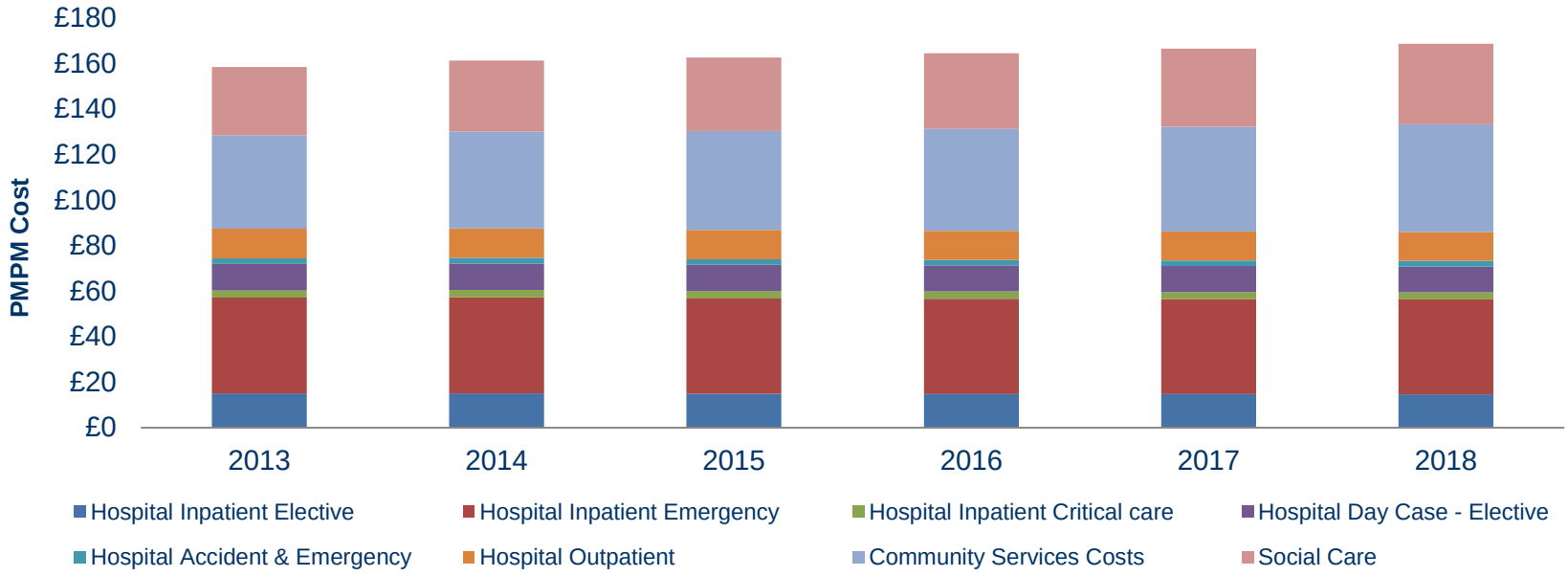


Key Results & Conclusions

- Integrated care programme by itself should deliver net savings through
  - reduced hospital emergency admissions and
  - shifting of residential care funded packages to domiciliary care packages over time,
  - but these will be insufficient to offset a general expected increase in the costs of over 65s over the next 5 years
- Focusing on the High Risk groups (top 1%) will not produce many savings by itself, because they do not account for a high enough proportion of total costs
- Integrated care need to focus on the top 8-10% of over 65s to generate reasonable savings AND even then will need to stratify programme to provide different levels of service to Medium and High Risk patients, or it will be too expensive
- Based on our experience, case loads need to be approx 150 per care co-ordinator for High risk patients and 400-450 for Medium risk patients. Anticipated case loads are likely too high to make a significant impact on patients' costs
- Initially savings will mainly come from reduced emergency admissions / beddays, as well as fewer A&E attendances
- Longer term savings from switching residential to domiciliary care packages are potentially significant
- Further savings are possible in hospital costs according to our benchmarks, but will involve a wider population programme of admission avoidance than this programme

Projections: Scenario 1: PPPM Costs

– “As is” scenario, without integrated care programme



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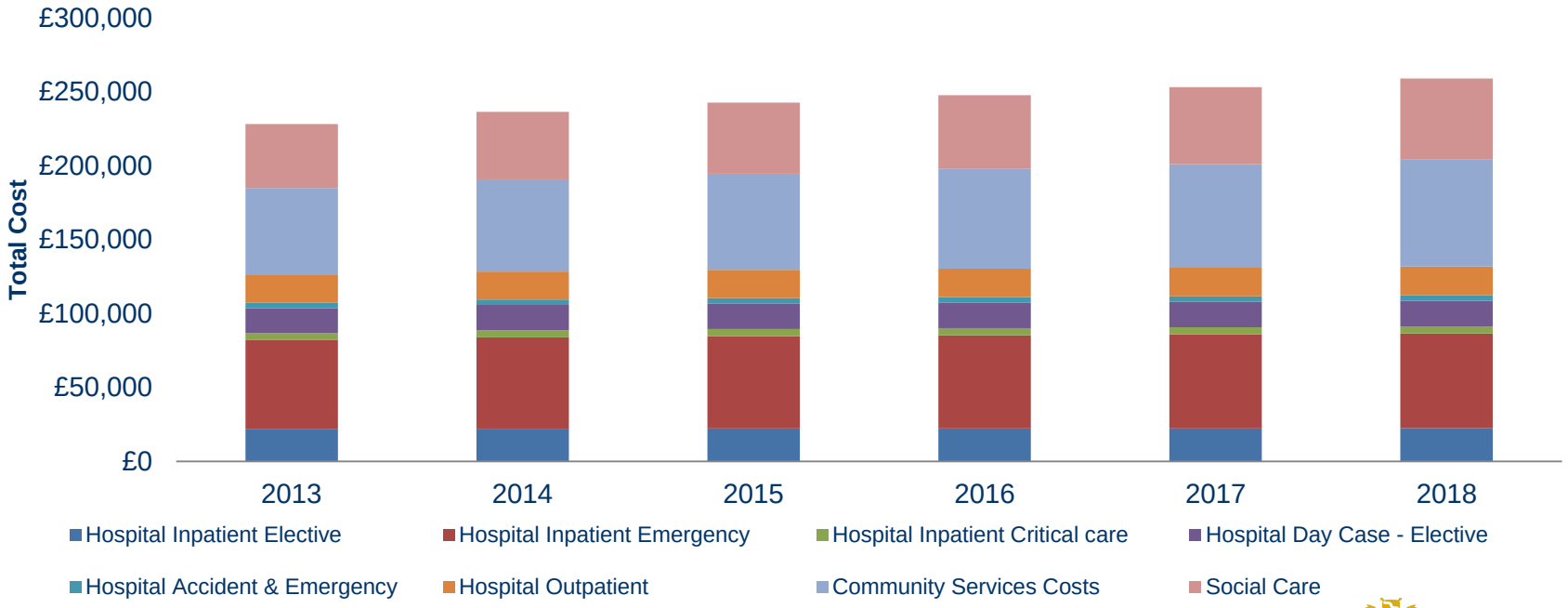
Projections: Scenario 1: TOTAL Costs (£000)

– "As is" scenario, without ICP



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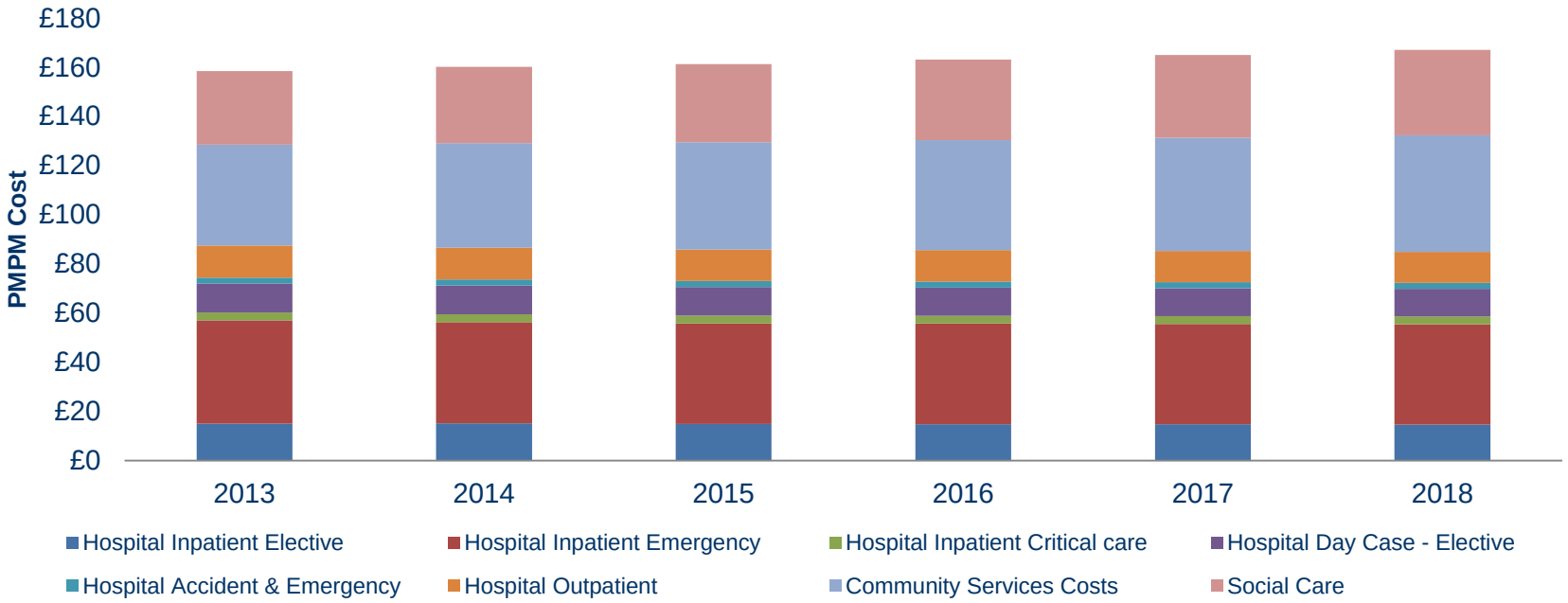
Projections: Scenario 2: PPPM Costs

– Including High Risk only in ICP



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Projections: Scenario 2: TOTAL Costs (£000)

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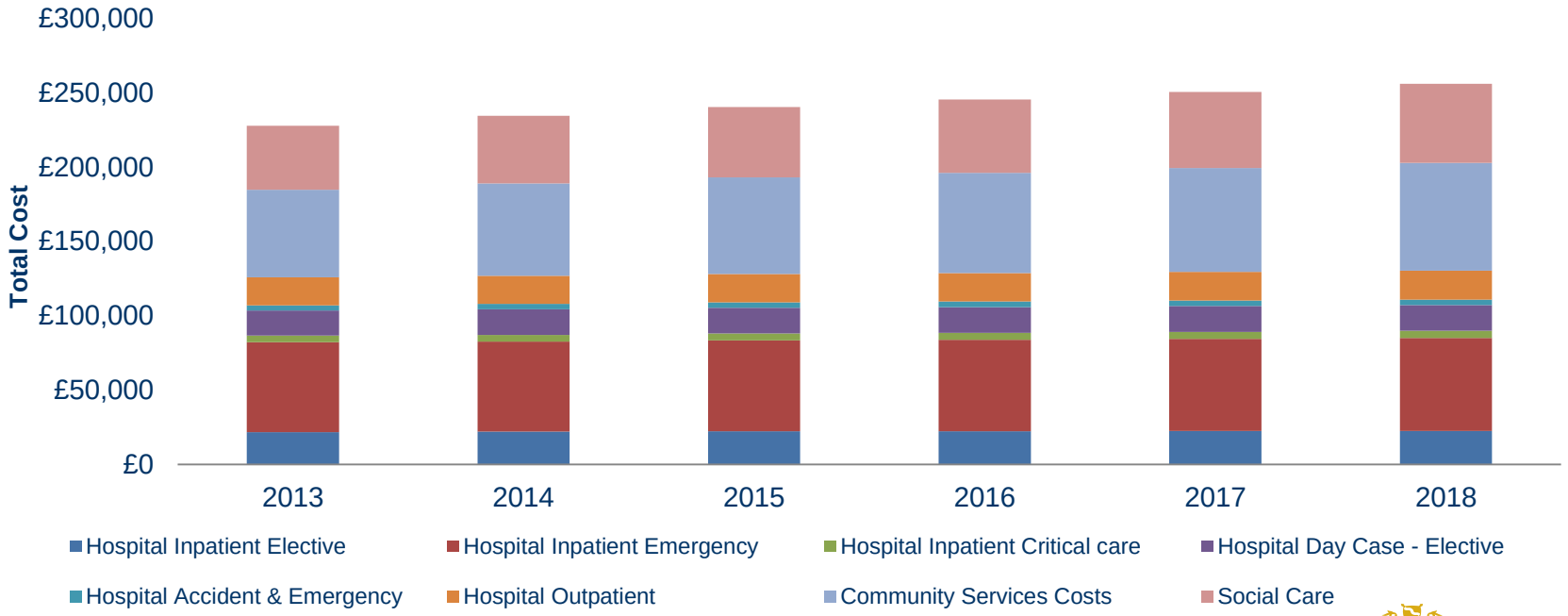

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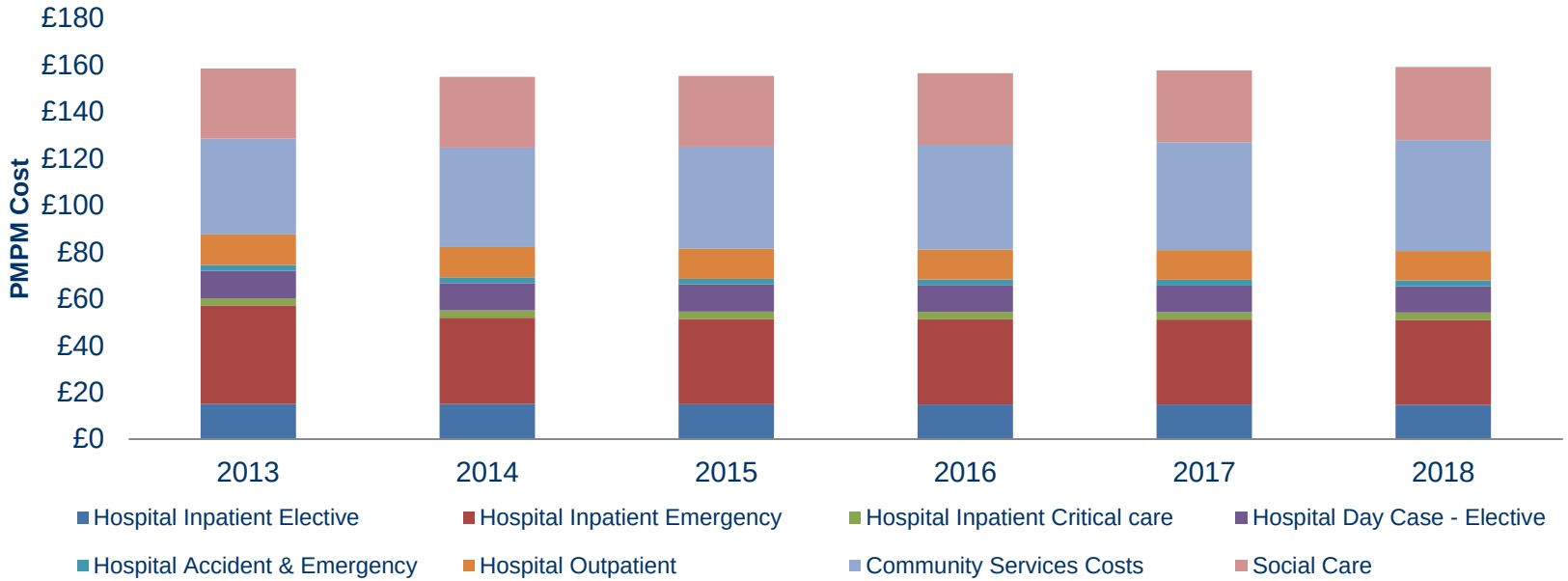
Projections: Scenario 3: PPPM Costs

– Including High and Medium Risk in ICP



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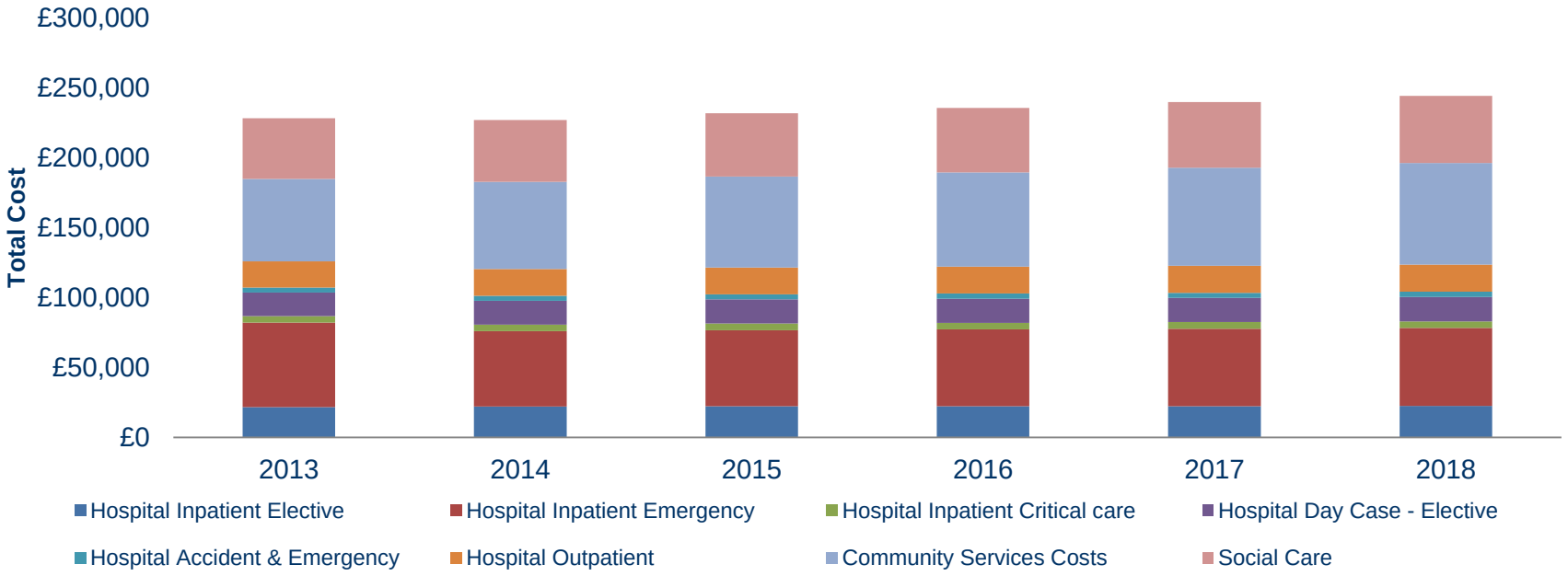
Projections: Scenario 3: TOTAL Costs (£000)

– Including High and Medium Risk in ICP



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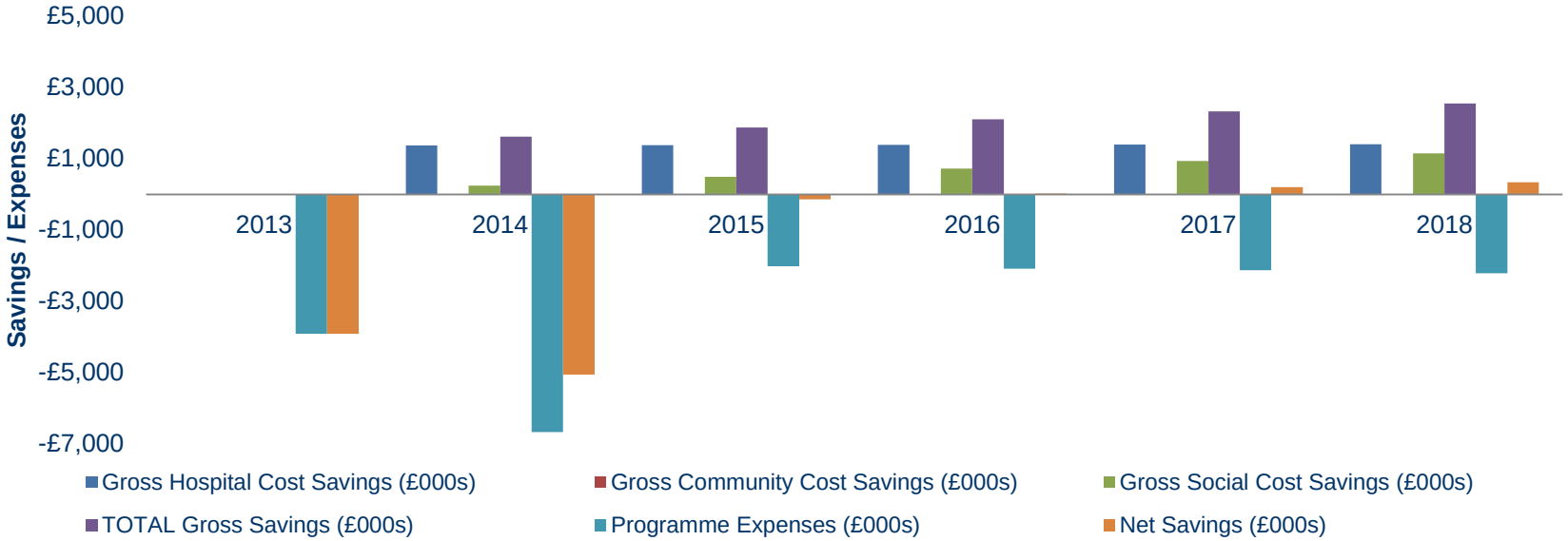
Key Results & Conclusions

- Scenario below looks at just providing ICP to the High Risk (top 1%) people
- Note that results are highly sensitive to the caseload assumed (150 per co-ordinator)



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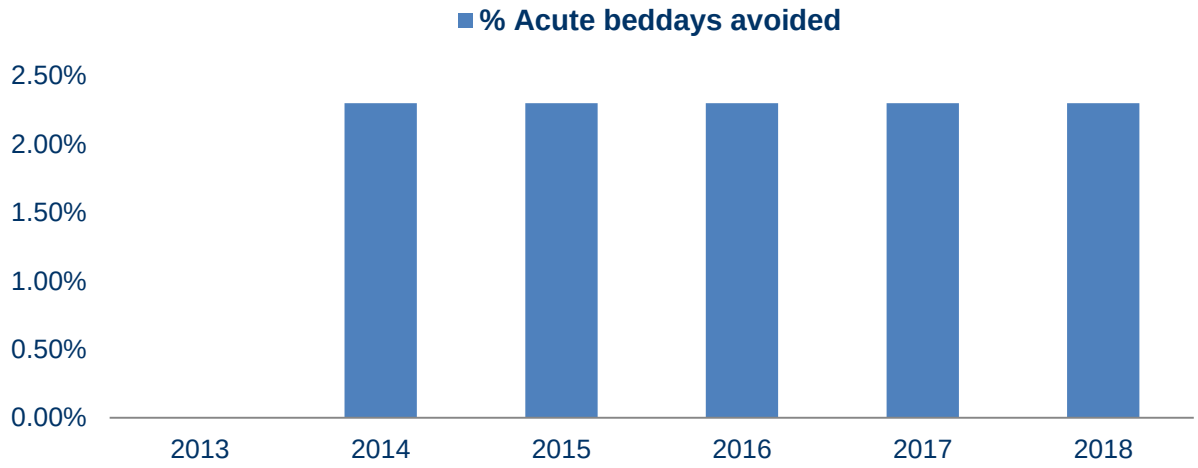

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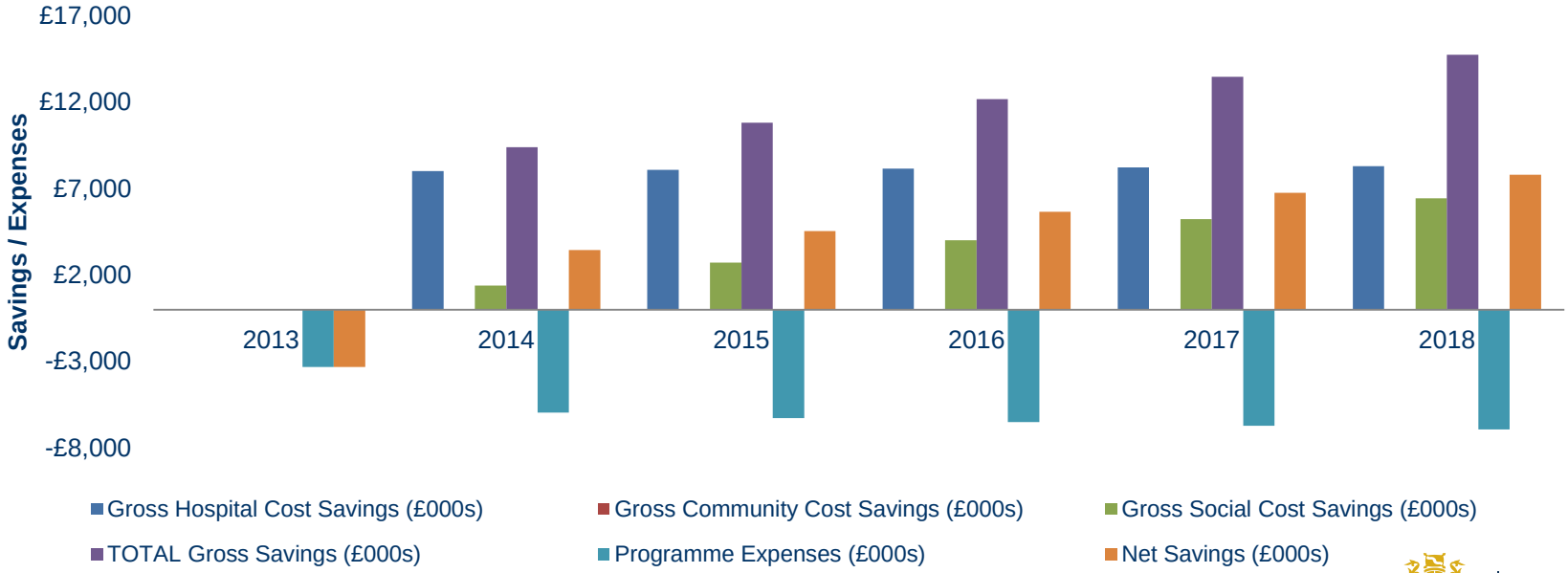
Key Results & Conclusions

- Scenario below looks at providing ICP to the High and Medium Risk people (top 10%)
- Note that results are highly sensitive to the caseload assumed (450 per co-ordinator)



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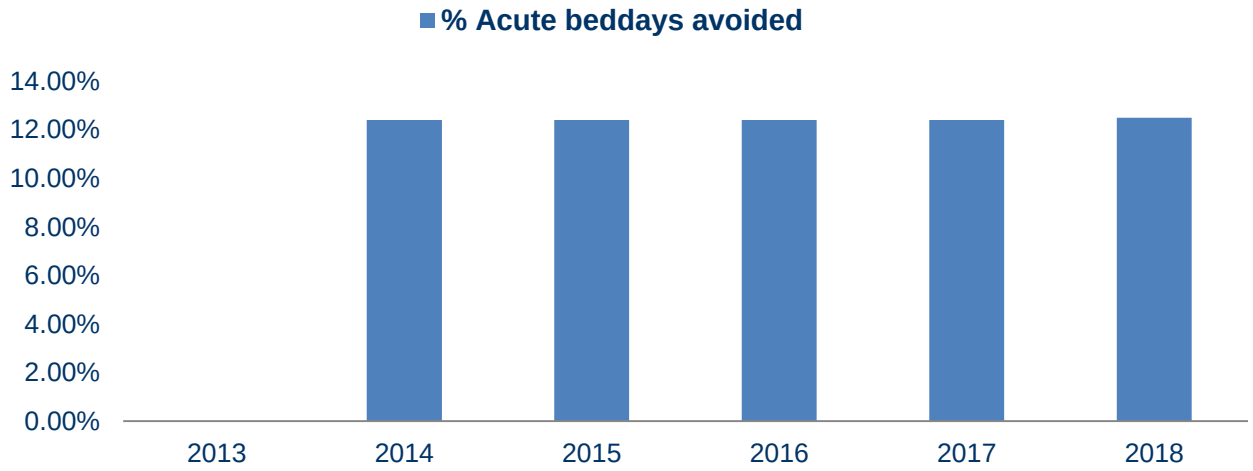

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Key Results & Conclusions

- Based on our benchmarks, the evidence base from the literature and our experience of other similar programmes, we expect the majority of potential savings from Proactive Care to accrue from three sources:
  - Reductions in A&E visits
  - Reductions in IP emergency admits
  - Reductions in residential care home funded placements, partially offset by more Dom Care services
- Our benchmarking shows significant potential for improvement in service utilisation:
  - A&E attendances are lower than our LM benchmarks, but 30% higher than Well Managed (WM)
  - Inpatient beddays are 30% to 40% higher than our most “loosely managed” (LM) benchmarks
  - Comparing social care utilisation against Torbay shows potential for a shift in services from residential to domiciliary care

Key Results & Conclusions

- We do not believe it is possible to meet the target of 10-15% reduction in emergency admits, with the current ICP, for several reasons
  - ICP currently targets top 1-2% by risk
    - But the top 1% (High Risk) people account for only 13% of emergency beddays,
    - The top 10% (Medium) risk people account for 51% of emergency beddays
- So, even assuming that the risk stratification tool identifies these High and Medium risk people correctly (a big assumption), programme would have to either eliminate 85% of emergency beddays for the top 1% of the population over aged 65, OR eliminate 16% of emergency beddays for the top 10% of the population over aged 65, just to get a 10% overall reduction in beddays for the over 65s population
- Even under the “as is” scenario, we expect emergency beddays to rise due to ageing and population size by around 3% a year, so the actual reduction would need to be more than the targeted 10%

Key Results & Conclusions

- To meet higher cost savings targets, either:

1. Caseloads would need to be much higher than our estimates
   - If case loads were 1,000 per co-ordinator, net savings would be much higher by 18/19, IF the hospital and social cost savings were held at the same level, (unrealistic, because higher case loads will lead to reduced savings)
2. Or, integrated care programme will need to expand its activities into more direct admission avoidance in order to reduce hospital costs
   - Benchmarks show there is significant scope to reduce beddays, but this will likely require case managers onsite in A&E and far more discharge planning across a much wider population

- Net savings estimates take into account increasing demand due to ageing, increasing in population size and higher prevalence of chronic diseases
  - So net savings are against a baseline of increasing costs from £228m FY 13/14 to anticipated £259m in 18/19 for the over 65s population (hospital, community and social care costs combined)

Key Assumptions

- The key assumptions in the “as is” scenario are:
  - 1% per year utilisation increase in hospital services and social services, independent of ageing. Mostly driven by changing prevalence of chronic diseases
  - -1.9% decrease in average cost of hospital services (the national “PbR” deflator)
  - 2% increase in social services or community services costs, independent of the ageing effect, due to salary increases
- We have assumed a constant proportion of people by age in each of the High, Medium and Low risk categories
  - Which means an overall increase in the High risk and Medium risk population category in absolute terms, but not in relative terms
- Salary costs for programme expenses are assumed to increase at 2% per year
- We assume the following treatment effects of integrated care programme:
  - an immediate impact on emergency beddays, reducing by 23% for High Risk, or High + Medium Risk (depending on who is enrolled in the PC programme)
  - An immediate impact of 2% decrease in A&E attendances due to the effect of the programme
  - Note these are partially offset by rising demand
- We assume a gradual shift from funded residential care packages to domiciliary care packages over 5 years

Projections

Basis:

- Based off estimated 2013/14 spend, which is itself calculated from end December 2014 data, and grossed up for a full year
- Uses ONS census projections from 2013-2018/19 in 5 year age bands
- “As is” scenarios, with demographic changes, population size changes and stated trends for activity and unit cost, but no cost savings built in from integrated care programme
- Projection shown is a summary of the underlying model – we project trends separately for each type of service. The summary output shows both total spend and PPPM spend

Key uncertainties

Projections rely on:

- Census projections on population size and demographic mix
- Historical hospital and community activity and cost data
- The proxy methodology used to identify High, Medium and Low risk populations. We identified these by stratifying patients by total hospital cost across financial years 11/12, 12/13 and part year 13/14 (data to end Dec 13)
  - Our methodology will be an imperfect proxy for the risk stratification tool
  - We have tried to mitigate for regression to the mean effects by assuming that a steady proportion at each age in each future year falls into each of our 3 risk categories. We do NOT assume it is the same people each year.
  - We have not explicitly allowed for changes in disease or long term condition prevalence, independent of age, apart from a 1% utilisation increase in hospital and social services

Key sensitivities

- Key sensitivities for the model results are:
  - The proportions of people in the programme and the “cut off“ point at which people are accepted into the programme
  - The treatment effect on emergency beddays and the ability of the integrated care teams to substitute domiciliary care packages for residential care over time
  - The caseload that each integrated care team can assume: higher caseload = lower expenses, but likely to have considerably less treatment effect
  - Apportionment of social and community care costs (which are significant) to risk groups
  - PbR deflator costs and salary costs (2%)
  - The social care costs are sensitive to any changes in threshold criteria; in effect we assume that thresholds for council funding as fixed as at 13/14 levels

Questions

Comments

Expressions of individual views by members of the Institute and Faculty of Actuaries and its staff are encouraged.

The views expressed in this presentation are those of the presenter.

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