Developing a complex preoperative intervention with primary care

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No conflicts of interest to declare

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• South Tees CCG Research/Innovation fund

• Preoperative Association Research grant
Workshop session

Presentation

• The current preoperative situation: Care pathways + silos
  Suboptimal RF management

• Facilitating change - engagement:
  - Primary/secondary HCPs – exploring knowledge and current practice
  - Patients - behaviour change preoperatively (exercise)

• Local outcomes
  - Patient management and research
Preoperative models of care
CURRENT PREOPERATIVE CARE PATHWAY

Primary care silo

Possible delays in pathway

GP
Fit for referral

Surgical OP
Define problem

Screening
e.g. AAA

PAC
Fit for surgery

Specialist referral

No surgery

Surgery

No complications

Complications

Morbidity
- delayed discharge
- increased costs
- Long-term QoL ↓

Death

Patient
QoL, home

Original QoL
and functional status?

x

x
Primary care silo

Possible delays in pathway

Current preoperative care pathway

GP
Fit for referral

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Death

Patient
QoL, home

Original QoL and functional status?

Fit for referral
Not really FFR = downstream delay
Pathway delays within secondary care

Key: Routine pathway, ↑ cost/morbidity, Satisfactory recovery, Possible delays in pathway

GP
Fit for referral

Surgical OP
Define problem

PAC
Fit for surgery

Specialist referral

No surgery

Surgery

Complications

Morbidity
- delayed discharge
- increased costs
- Long-term QoL ↓

Death

Patient
QoL, home

Screening
e.g. AAA

Original QoL and functional status?
Further assessment or optimisation

Key:  
- Routine pathway  
- ↑ cost/morbidity  
- Satisfactory recovery  
- Possible delays in pathway X

GP  
Fit for referral

Surgical OP  
Define problem

Screening  
e.g. AAA

PAC  
Fit for surgery

Specialist referral

No surgery

Surgery

Complications  
- Morbidity  
  - delayed discharge  
  - increased costs  
  - Long-term QoL ↓

Death

Patient  
QoL, home

Original QoL and functional status?

No complications

X
Large feedback loop
Large feedback loop

- Inefficient
- Lacks patients focus
- Facilitates poor communication and ‘probably’ suboptimal outcomes
Patient risk factors and outcome
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<th>Perioperative risk increase? (Magnitude)</th>
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$^\$ Unhealthy behaviours occur in clusters (8)

*Prevalence depends on population studied
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Perioperative Insult

- Smoking
- Inactivity/exercise
- Alcohol
- Nutritional imbalance
Perioperative Insult

- Smoking
- Inactivity/exercise
- Alcohol
- Nutritional imbalance
- Anaemia
- Comorbidities
- Cognitive
- Frailty
Large feedback loop

- Inefficient
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Perioperative Insult

- Smoking
- Inactivity/exercise
- Alcohol
- Nutritional imbalance
- Comorbidities
- Frailty
- Cognitive
- Anaemia

Sub-optimal outcome
Facilitating change
COMPELL research team: Systematic WPs

• Knowledge and attitudes to change amongst HCPs

• Patient willingness to engage

• Outcomes and local models of change
WP1: Online survey HCPs
Aims

• Establish knowledge of impact of risk factors on perioperative outcome

• Explore attitudes to screening and managing modifiable risk factors preoperatively collaboratively
Methods

• Structured online survey distributed to:
  - Primary HCPs via CCG networks and RCGP
  - Secondary HCPs via POA

• 20 questions – knowledge and practices

• Free-text option – exploring attitudes
Which conditions predispose to perioperative complications?
Which conditions predispose to perioperative complications?

- Smoking
- Hazardous drinking
- Mild anaemia
- Frailty
- Cognitive impairment

Legend:
- Primary
- Secondary
Which conditions predispose to perioperative complications?

- Smoking
- Hazardous drinking
- Mild anaemia
- Frailty
- Cognitive impairment

Primary and Secondary risks are indicated by red and blue bars, respectively.
Preoperative behaviour advice
Preoperative behaviour advice

- Smoking cessation
- Lose weight
- Gain weight
- Reduce drinking
- Increase activity
- None of these

- Primary
- Secondary
Preoperative behaviour advice

- Smoking cessation
- Lose weight
- Gain weight
- Reduce drinking
- Increase activity
- None of these

Primary and Secondary categories.
Routine screening
Routine screening

- BP
- Anaemia
- Frailty
- Cognitive imp
- OSA
- None

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<tr>
<th>Condition</th>
<th>Primary</th>
<th>Secondary</th>
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<td>BP</td>
<td>70</td>
<td>80</td>
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Routine screening

- BP
- Anaemia
- Frailty
- Cognitive imp
- OSA
- None

[Bar chart showing comparison between primary and secondary screening for each condition]
Guidance recommendation
Guidance recommendation

Hazardous drinking
- Primary
- Secondary

Activity recommendation
- Primary
- Secondary
Attitudes/comments

• >65% Fitness for surgery: Collaborative Commence on referral

• Primary care: Limited time and resources Generally positive response
Attitudes/comments

‘Don’t start chucking more work at under resourced primary care!’

‘Fascinating... it will influence my behaviour.... never thought to advise preop exercise. It makes sense!’

‘I don’t ROUTINELY advise lifestyle change prior to referral for major surgery as I assume this is covered by preop assessment. I think there is a role for primary care to help in this at referral.’

‘What a long overdue and refreshing project. This is also a stimulating way of presenting the task. We should be adopting this challenge UK wide.’
Attitudes/comments

- >65% Fitness for surgery: Collaborative
  Commence on referral

- Primary care: Limited time and resources
  Generally positive response

- Secondary care: More engagement primary care
  Generally positive response
‘This is important work – any suggestions how to liaise with primary care?’

‘I think this is a really important area of research and practice.’

‘Good work! If you can engage GPs to do anything other than pass the buck! Good luck on the uphill task of engaging GPs.’

‘Highly topical – the most significant research area for our specialty at present.’

‘I strongly believe that patients should be optimised at primary level and uncontrolled comorbidities should be looked at at the time of referral to avoid delays, cancellations and to avoid patient frustration.’
General outcomes

• General willingness to collaborate

• Encouraging standards of practice certain areas

• Degree of mud-slinging between healthcare sectors!

• ‘Areas of concern’
  Education
  Screening practices
WP2: Patient willingness to engage
Preoperative exercise: an evaluation of patient attitudes
Aims

• General activity levels and perceptions of personal fitness

• Time spent engaged in regular physical activity

• Barriers to performing regular physical activity

• Receptiveness to receiving preoperative exercise advice
Methods

• Prospective patient survey: 04 – 06/14

• Patients attending PAC prior to scheduled intermediate to high-risk surgery (NICE grade 3+4)

• Short structured questionnaire
Results

- 103 responses
- Mean age 63.4 years
- M:F 62:41
- Surgery grade 3:4 31:72
- Demographics: Low socio-economic catchment
  High comorbid disease
Patient perceptions of personal fitness

Number of patients

- Unfit
- Slightly fit
- Moderately fit
- Very fit
- Extremely fit
• Mean reported activity level 5.6 METs
• 55% patients spent <1 hour per WEEK engaged physical activity/exercise
• 39% patients regular structured physical activity
Patient attitudes

- Main barriers to exercise:
  - Personal health concerns
  - Time and motivation

- Other barriers:
  - Cost
  - Travel
  - Availability of facilities
Patient attitudes

- Main barriers to exercise:
  - Personal health concerns
  - Time and motivation

- Other barriers:
  - Cost
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  - Availability of facilities

- 90% receptive to preoperative exercise if improved perioperative outcome
High-intensity interval exercise training before abdominal aortic aneurysm repair (HIT-AAA): protocol for a randomised controlled feasibility trial

Garry A Tew,1 Matthew Weston,2 Elke Rothmann,3 Alan M Betterham,4 Joanne Gray,5 Karen Kerr,6 Denis Martin,7 Shah Nawaz,8 David Yates,8 Gerard Danjoux9

ABSTRACT

Introduction: In patients with large abdominal aortic aneurysm (AAA), open surgical or endovascular aneurysm repair procedures are often used to minimize the risk of aneurysm-related rupture and death; however, aneurysm repair itself carries a high risk. Low cardiorespiratory fitness is associated with an increased risk of early post-operative complications and death following elective AAA repair. Therefore, fitness should be enhanced before aneurysm repair. High-intensity interval training (HIT) is a potent, time-efficient strategy for enhancing cardiorespiratory fitness. Here, we describe a feasibility study for a definitive trial of a pre-operative HIT intervention to improve post-operative outcomes in patients undergoing elective AAA repair.

Methods and analysis: A minimum of 50 patients awaiting elective repair of a 5.5-7.0 cm infrarenal aneurysm will be allocated at randomisation to HIT or usual care control in a 1:1 ratio. The patients allocated to HIT will complete three hospital-based exercise sessions per week for 4 weeks. Each session will include 2 or 4 min of high-intensity stationary cycling followed by the same duration of easy cycling or passive recovery, repeated until a total of 16 min of high-intensity exercise is accumulated. Outcomes to be assessed before randomisation and 2-4 h before aneurysm repair include cardiorespiratory fitness, maximum AAA diameter, and health-related quality of life. In the post-operative period, we will record hospitalisation (ward or critical care unit), organ-specific morbidity, mortality, and duration of critical care and hospital stay. Twelve weeks after the discharge, participants will be interviewed to assess quality of life and determine post-discharge healthcare utilisation. The costs associated with the exercise intervention and healthcare utilisation will be calculated.

Background

Major non-cardiac surgery is associated with a substantial peri-operative risk; the overall mortality rate appears low (1-2%), but the number of operations performed (c. 850 million per annum worldwide) results in a large absolute number of deaths. Moreover, post-operative complications occur up to five times as frequently, with survivors experiencing physical limitations and reduced life expectancy. Identification of individuals in this `at-risk’ group for death and complications creates a significant challenge to clinicians in the peri-operative period. Objective assessment of cardiorespiratory fitness in the pre-operative period using cardiopulmonary exercise testing (CPET) is the established gold standard across the UK. It has a developing evidence base in predicting adverse outcome across a variety of high-risk surgical procedures, and this has contributed substantially to clinicians’ understanding of the impact of poor cardiorespiratory fitness.

There is a convincing physiological rationale linking improved cardiorespiratory fitness to a reduction in adverse outcome following surgery. The surgical stress response involves neuroendocrine, metabolic and inflammatory effects leading to a catabolic state and increased basal metabolic rate (up to three times pre-operative values). A patient with adequate cardiorespiratory fitness is able to meet these extra demands post-operatively, but patients with inadequate fitness levels might be unable to cope, leading to tissue hypoxia and peri-operative complications. Approximately half of the patients presenting for intra-abdominal surgery do not have the perioperative fitness, on objective exercise testing, to be deemed ‘low risk’ for peri-operative complications.
In-hospital

3x per week (4 weeks)

83% patients attended ≥ 9/12 sessions
WP3: Models of change + research
Exercise advice for adults before an operation

Patient Information

Pre-operative assessment
Suggestions of exercises and daily activities to include

**Exercises**
- Swimming
- Running
- Fast cycling

**Daily activities**
- Moving furniture or carrying heavy objects
- Washing car
- Heavy gardening (weeding or mowing lawn)
- Heavy housework (vacuuming/mopping floor)
- Carrying shopping
- Light housework (dusting/ironing/making beds)
- Bathing
- Dressing
- Brushing hair/teeth

Scale of exertion

10 9 8 7 6 5 4 3 2 1

- Walking on the flat
- Dancing
- Golf
- Slow cycling
- Walking dog on the flat
- Slow walking
- Darts
- Bowling

Adapted from ‘A Helping Hand to heart recovery Patient Information, South Tees Cardiac Rehabilitation Team’
Exercise advice for adults before an operation
Patient Information

PIL distributed through PAC and surgical clinics
Exercise advice for adults before an operation

Patient Information

PIL distributed through PAC and surgical clinics

Agreement with local GPs to distribute at time of referral
Exercise advice for adults before an operation
Patient Information

- PIL distributed through PAC and surgical clinics
- Agreement with local GPs to distribute at time of referral
- Smoking cessation training through regional PH services (PAC + surgical clinics)
Exercise advice for adults before an operation
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Preop ‘Exercise on referral’ scheme (GP + PAC)
Changing health behaviours prior to surgery: What are your views?

Questionnaire

This questionnaire is for patients who are undergoing surgery. There are no right or wrong answers. We are only interested in your views. The questionnaire is both anonymous and confidential. Results from the questionnaire will be summarised anonymously from all respondents. It is important that we have the views of as many patients as possible in order to gain a complete picture.

Completion of this questionnaire is voluntary and the questionnaire has been reviewed by the Wales Research Ethics Committee 7.

Some information about you...
- Age:
- Sex:
- Marital status:
- Ethnicity:
- Postcode:
- Occupation:

To be completed by nurse...
- Patient BMI:
- Planned operation:
- Site:
- Patient seen: before PAC □ after PAC □

Version 3 05.06.15
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• Research exploring more multimodal behaviour change

• Psychologists Newcastle University

• Informed development of further research and implementation of new models of care
The Future
Proposed flow diagram for Preoperative patient management
Silo’s abolished – integrated primary – secondary care model
Embedded within model:

- More efficient + integrated (streamlined) pathway
- More primary care + patient engagement
- Improved ‘Fitness for referral’ – reduced downstream problems
- Economic benefits
- ‘Hopefully’ improved outcomes
References

6. Patridge JSL et al. The impact of pre-operative comprehensive geriatric assessment on postoperative outcomes in older patients undergoing scheduled surgery: a systematic review. Anaesthesia 2014;69 (Suppl. 1):8-16
8. Buck D. Clustering of unhealthy behaviours over time. Implications for policy and practice. Kings Fund 2012