

HOSPITAL INPATIENT REHABILITATION VS HYBRID HOME PROGRAM FOLLOWING TKA: A RANDOMISED CONTROLLED TRIAL (HIHO)

Buhagiar M, Naylor JM, Kohler F, Harris IA, Wright R,
Fortunato R, Xuan W.

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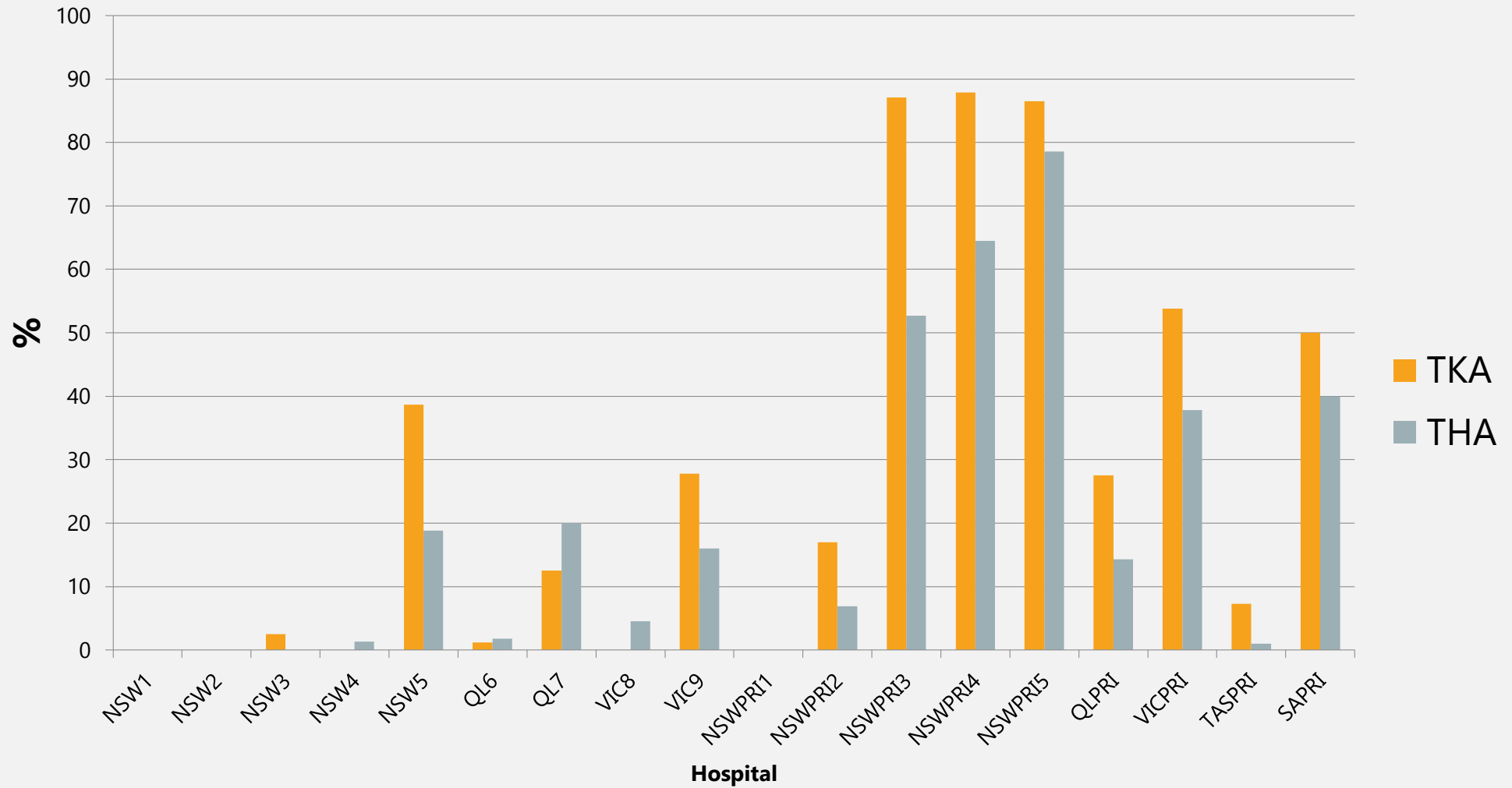
Funding: HCF Research Foundation 2014-2016

WHY DO WE CARE?

WE CARE BECAUSE

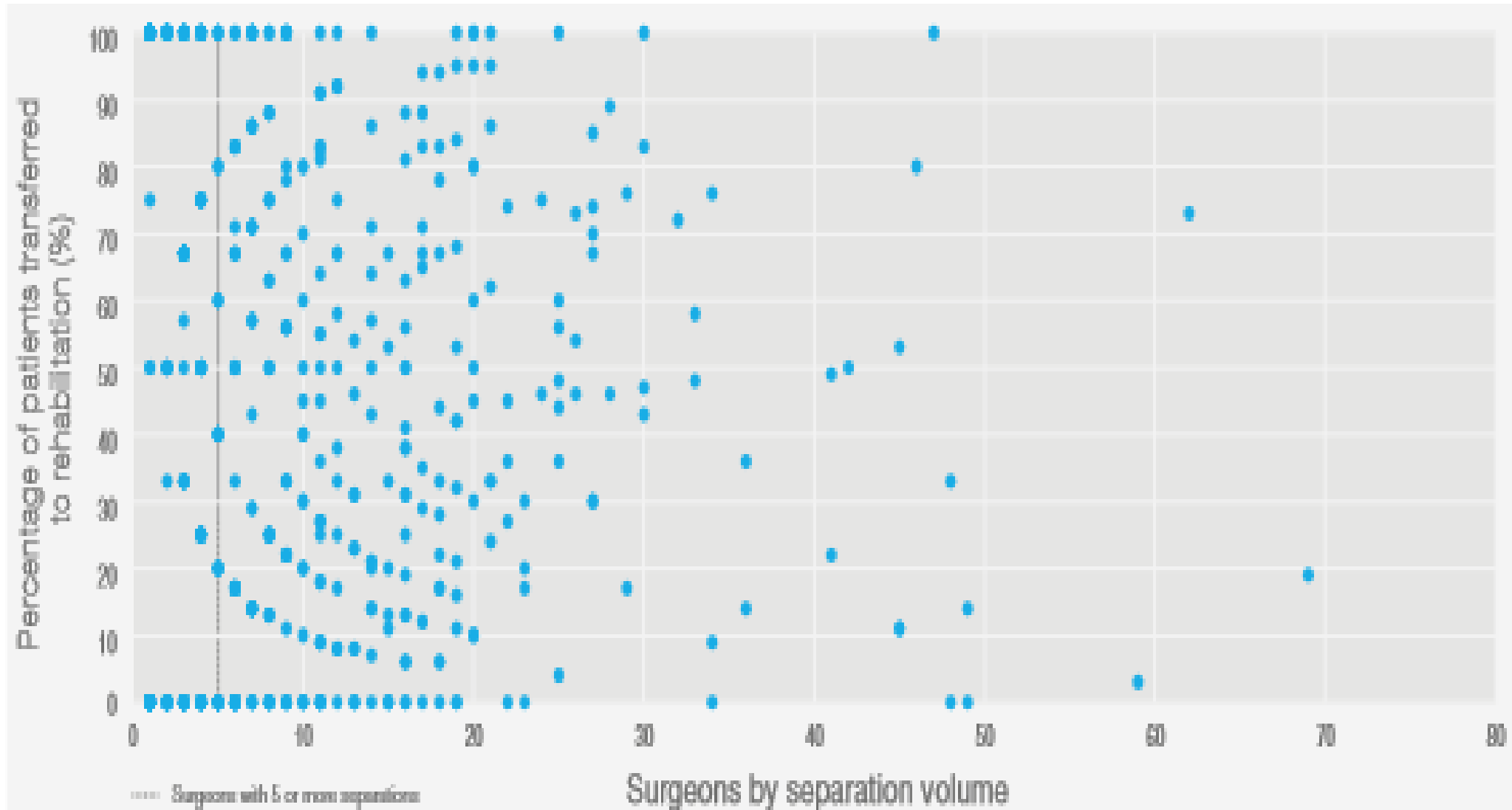
- High volume
- High cost
- Widespread variation

Inpatient rehabilitation utilisation by Sector & State



EPOC, 2013-2015, unpublished data

Figure 16: Percentage of patients transferred to rehabilitation



WHAT DOES THE EVIDENCE SAY?

SETTING: INPATIENT VS NON-INPATIENT

- ❖ Inpatient vs Domiciliary RCT – Mahomed et al 2008, JBJS
 - ❖ n = 234 TKA and THA
 - ❖ 17 days inpt rehab vs 8 domiciliary visits
 - ❖ No difference in WOMAC Fn, SF-36 or satisfaction 3 months post surgery
 - ❖ Domiciliary more cost-effective

AIM

Using a public sector setting, we aimed to determine whether 10 days of inpatient rehabilitation followed by a hybrid home program (clinician-monitored home program) provides superior mobility and patient-reported function 6 months after TKA compared to a clinician-monitored home program alone

METHODS - DESIGN

- Multicentre RCT
- Multiple outcomes
 - Primary = distance walked in 6MWT, 26 weeks
 - 140 participants; 60 m difference (160 participants provided 90% power to detect a difference at $p < 0.05$)
 - PROMS; satisfaction; return to work
 - cost-effectiveness if Inpt rehab shown to be superior
- Parallel observational 'usual care' cohort
 - Control for preference

INCLUSION & EXCLUSION CRITERIA

Included

- Undergoing primary unilateral TKA at Fairfield or Sutherland Hospitals
- Primary diagnosis of OA

Excluded

- Predisposition to 'need, inpatient rehabilitation (clinician-determined)
- NES, documented dementia
- Unable to participate in f/u; lived out-of- area
- Catastrophic complication acutely

PARTICIPANT ALLOCATION

- Central randomization by site (1:1 ratio) stratified for age (<70, > 70), gender, height
- Allocation determined days 3-5 following surgery
 - Check consent
 - Criteria (eg complications)
 - Bed availability
 - Randomisation
- Those who changed their mind post-surgery were invited to participate in the observational arm (clinician-monitored home program)

TREATMENT ARMS

Hospital Inpatient Rehabilitation (HI)

- Inpatient rehabilitation at for 10 days
- 3 hrs / day
- Followed by hybrid home program (clinician-monitored HP)

Hybrid Home Program (HO) (usual care) (clinician-monitored HP)

- Group-based exercise session in the physiotherapy depts.
- Home program rehearsed and individualised
- Weeks 2, 4 and 10 post op

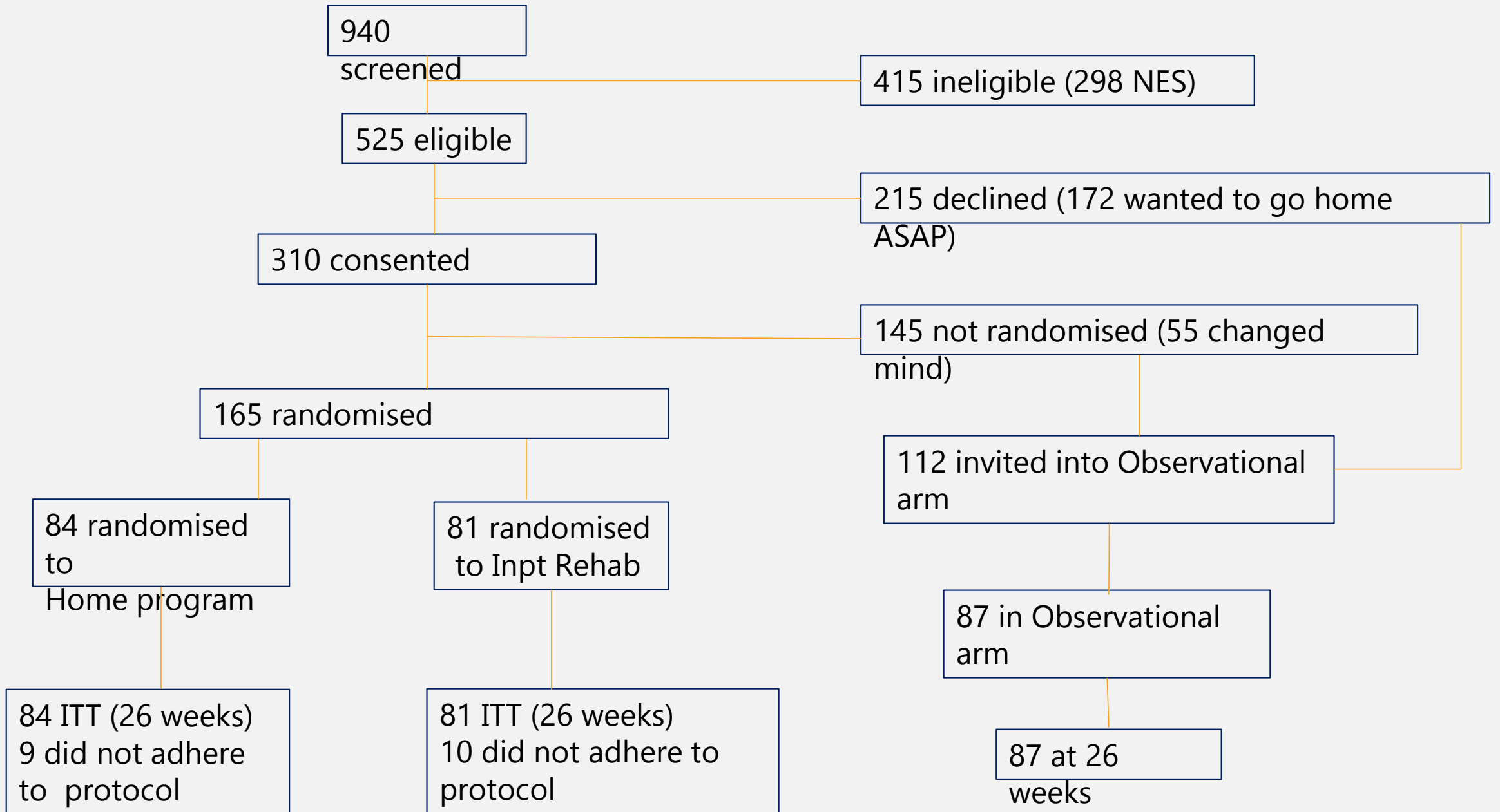
ANALYSIS

ITT and PP

- Primary outcome -6MWT distance 26 weeks
 - ANCOVA, treatment group as main study factor
 - 6MWT distance at baseline, weight, co-morbidities and participant preference as covariates as were stratifying variables. Site incorporated as a random effect.
- Secondary outcomes (10,26, 52 weeks)
 - a multi-level hierarchical model was used to estimate the treatment x time interaction
 - Same covariates as above
 - Other
 - Health resource utilisation and return to work outcomes
- Observational vs HO
 - mean 6MWT and other secondary outcomes were compared, adjusting for the aforementioned covariates.

RESULTS

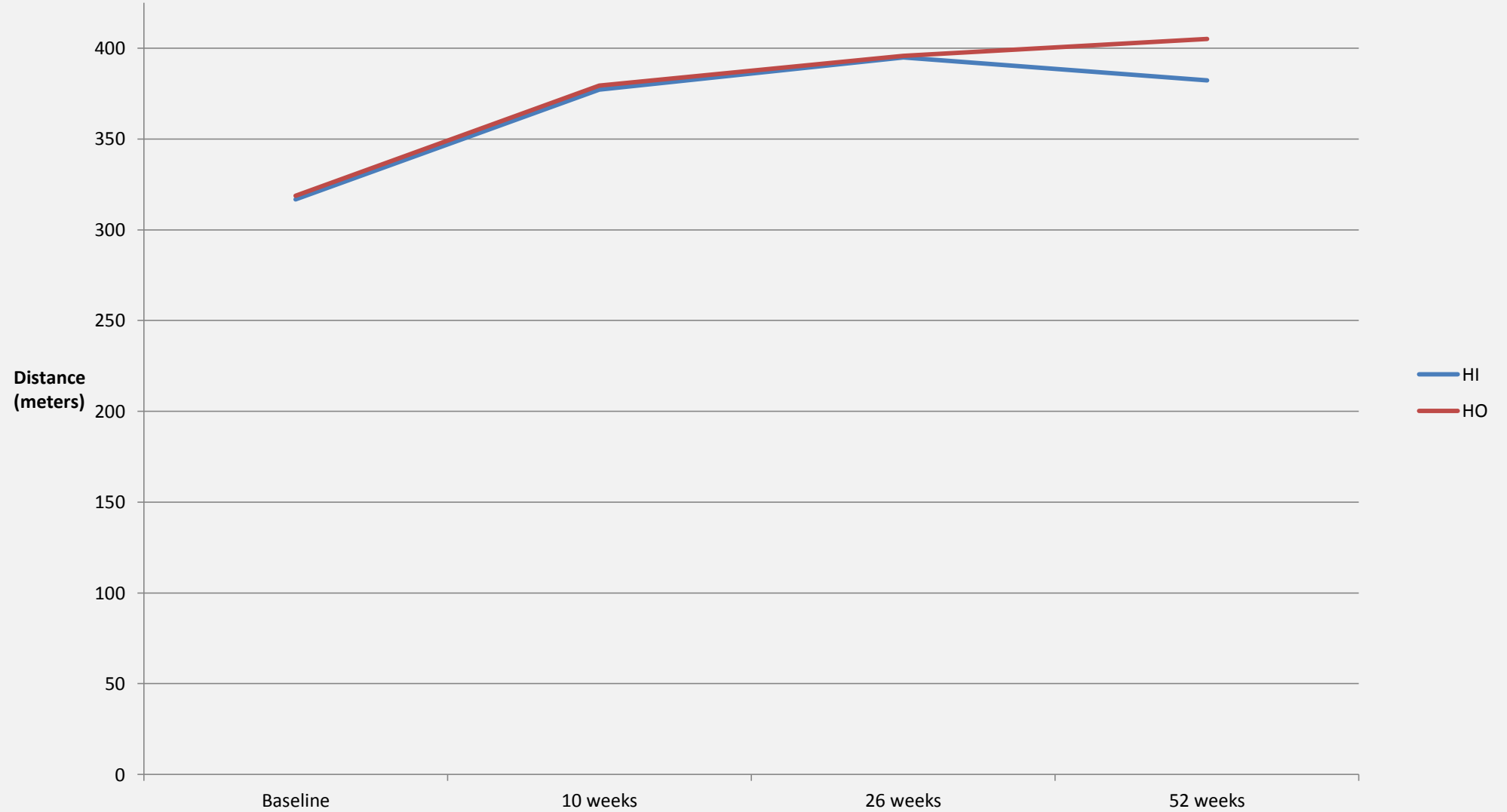
Cohort ascertainment and retention



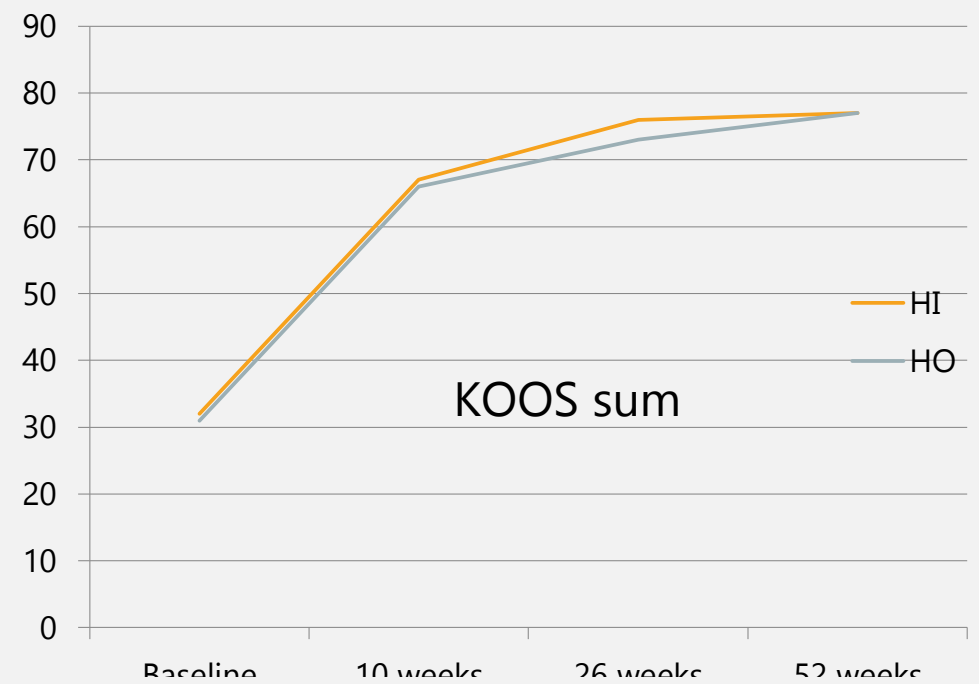
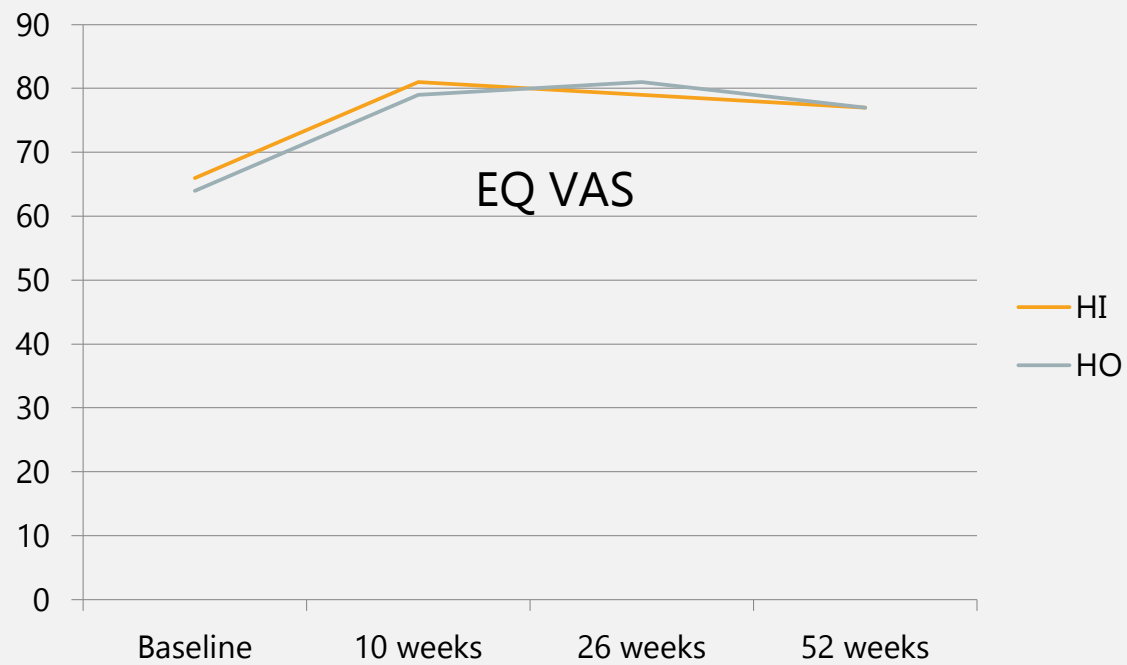
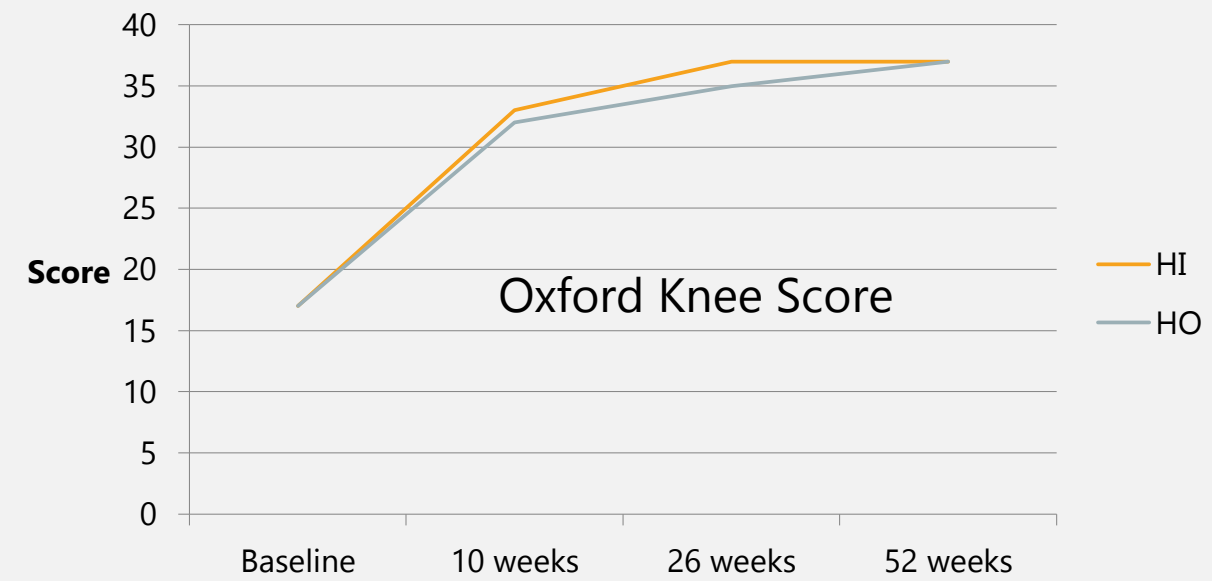
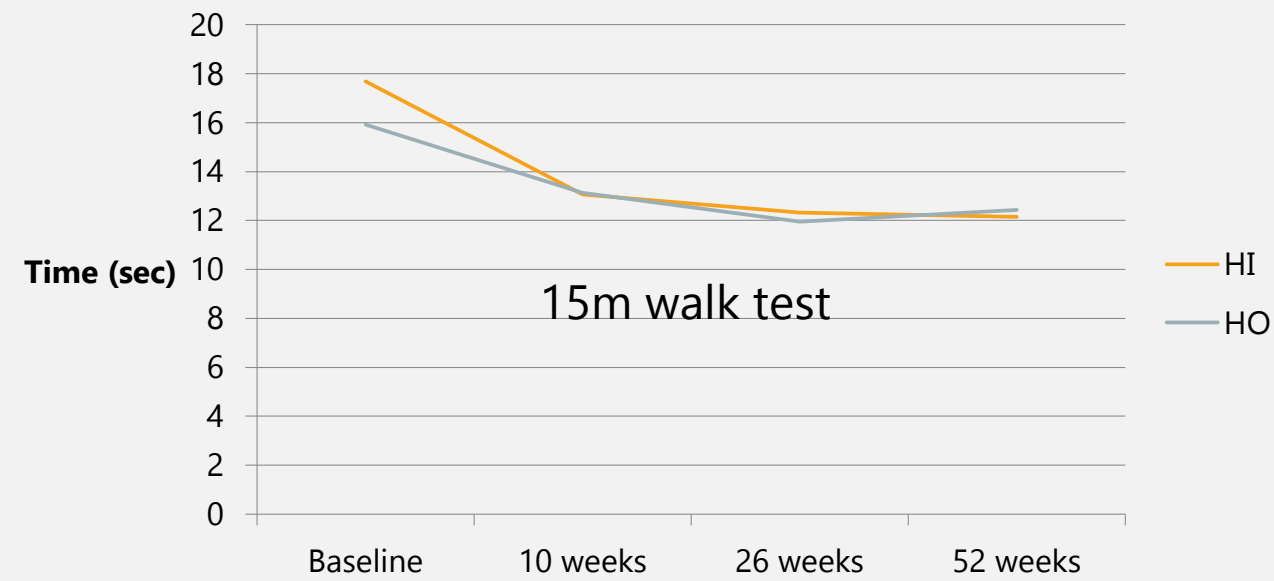
Characteristic	rehabilitation (N=81)	Home program (N=84)	Observational (N=87)
Female sex - n (%)	56 (69)	57 (68)	38 (43)
Age - years	66.9 (8)	66.9 (9)	66.8 (9)
Body mass index ^b	34.7 (7)	34.8 (7)	32.9 (7)
Significant co-morbidity - n (%)	61 (75)	67 (80)	63 (72)
Preference for inpatient rehabilitation - n (%)	46 (57)	52 (62)	N/A
Walking at time of surgery - n (%)	11 (14)	14 (17)	14 (16)
6-minute walk test – m	316.8 (107.7)	318.8 (108.0)	329.5 (115.3)
WOMAC Knee Score ^c	17.4 (7.0)	16.7 (7.2)	17.5 (8.1)
Visual analogue scale ^e	66.3 (19.4)	64.0 (19.0)	64.1 (20.8)
WOMOS ₄	32.0 (19.0, 44.0)	31.0 (19.0, 43.0)	36.0 (22.0, 44.0)

Characteristic	Inpatient rehabilitation (N=81)	Home program (N=84)	Observational (N=87)
Outpatient PT - mean (CI)	3.02 (2.75, 3.30)	3.07 (2.81,3.34)	2.62 (2.37,2.88)
Days in inpatient rehabilitation - mean (CI)	9.51 (9.10, 9.92)	-	-
TKA-related ^d emergency department presentations - n (%)	5%	5%	6%
TKA-related hospital readmissions - n (%)	5%	2%	2%
Manipulations under anaesthetic - n (%)	5%	4%	1%
Weeks taken to return to work - mean (CI)	7.6	7.8	8.4
Satisfaction with rehabilitation received %(95% CI)	92% (88, 96)	83%* (79,87)	-

6MWT distance across time: HI vs HO

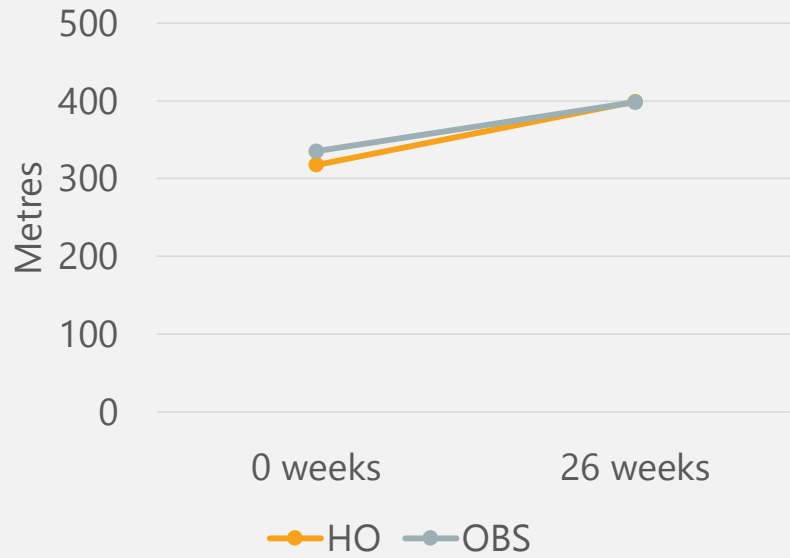


Analysed using ANCOVA with group as main factor, site as random variable and preference, weight, age etc as covariates

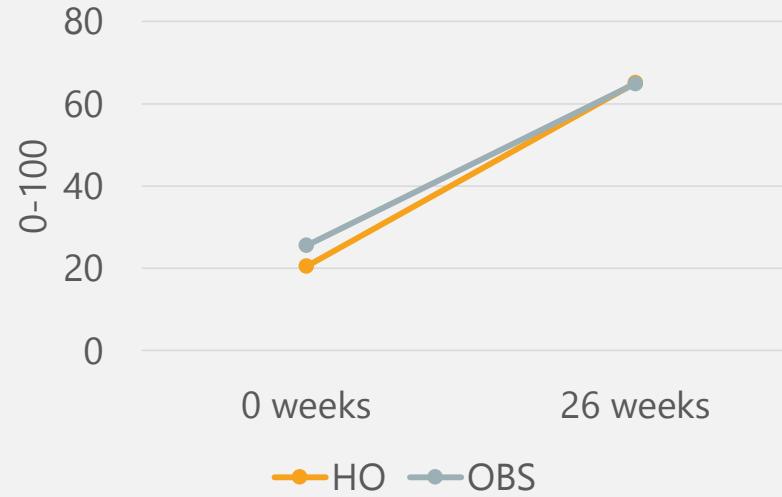


OBSERVATIONAL VS HO

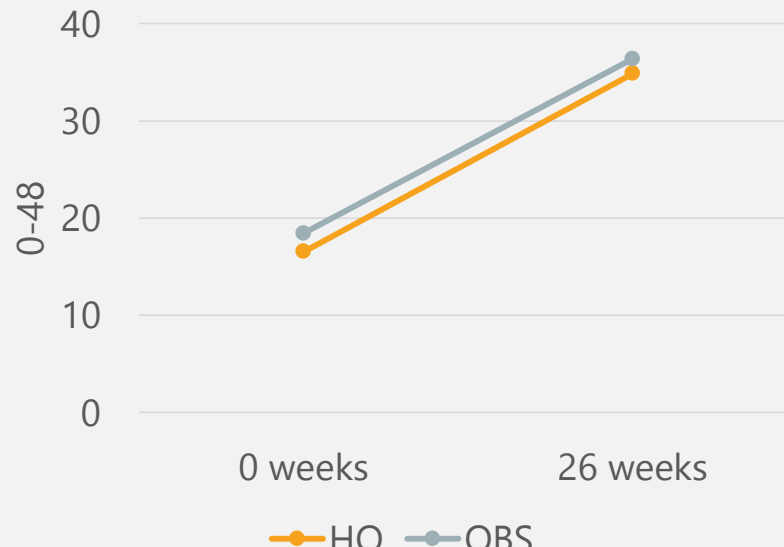
6MWT: HO vs OBSERVATIONAL



KOOS QOL: HO vs OBSERVATIONAL



OKS: HO vs OBSERVATIONAL



CONCLUSIONS

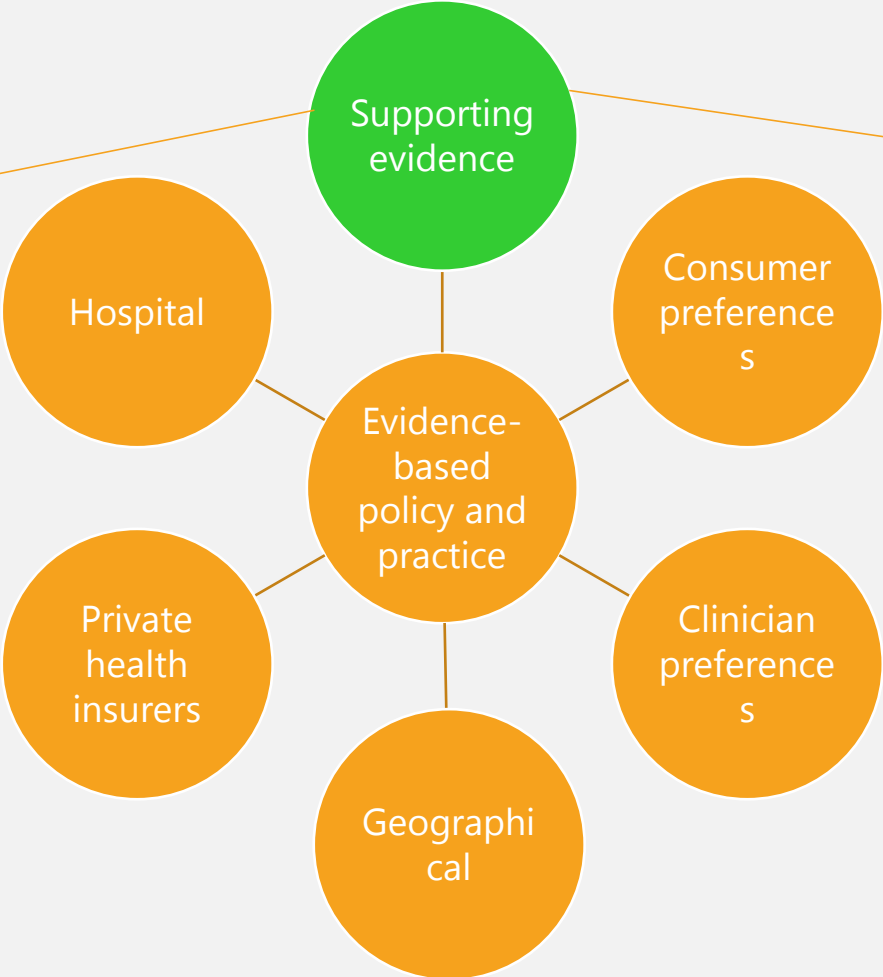
Among adults undergoing uncomplicated total knee arthroplasty, the use of inpatient rehabilitation compared with a monitored home-based program did not improve mobility at 26 weeks post-surgery

These findings do not support inpatient rehabilitation for this group of patients

We recognise a minority of patients (excluded in this trial) may benefit from inpatient rehabilitation for social or physical reasons

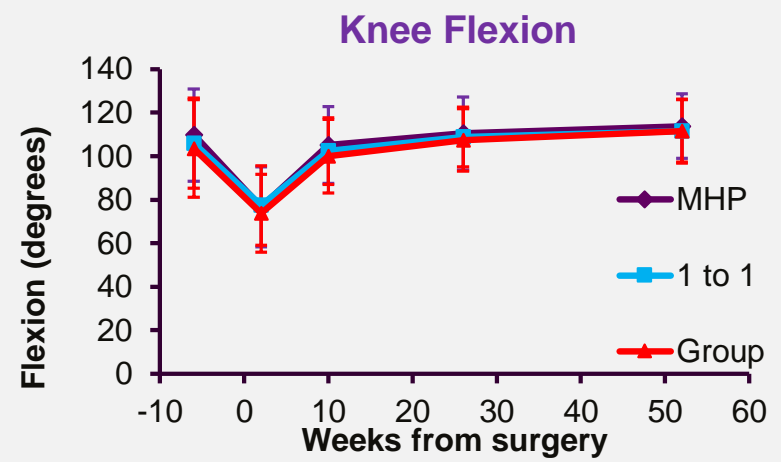
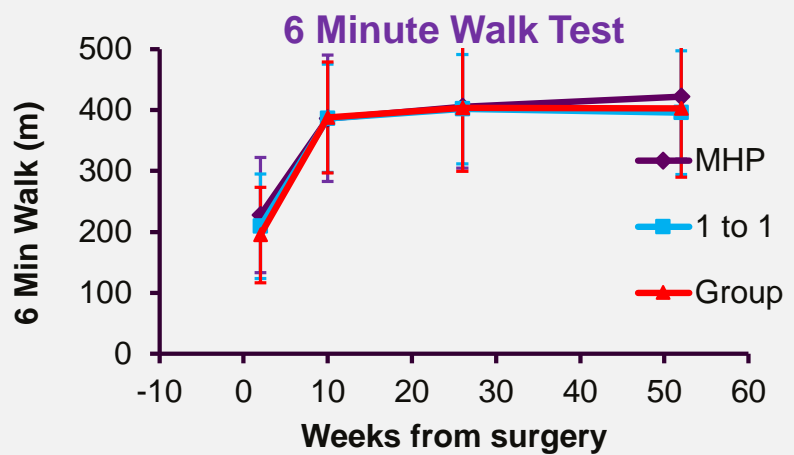
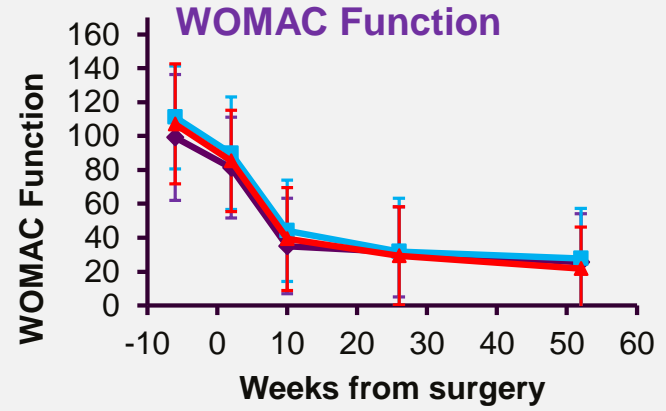
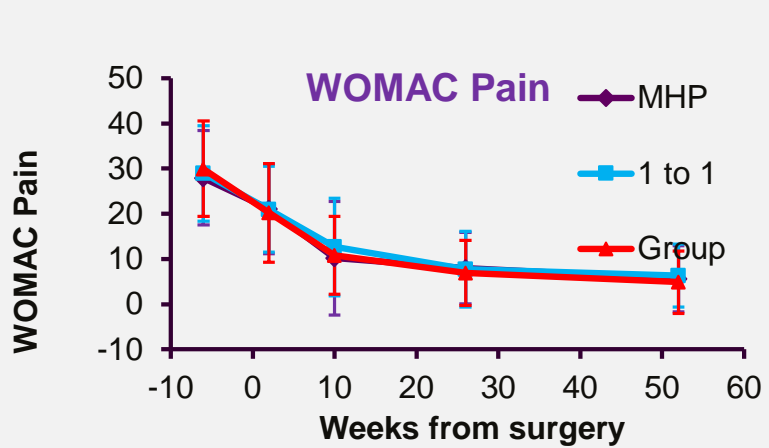
ENABLERS OF & BARRIERS TO POLICY & PRACTICE CHANGE

Lack of superiority consistent *** with community-based studies



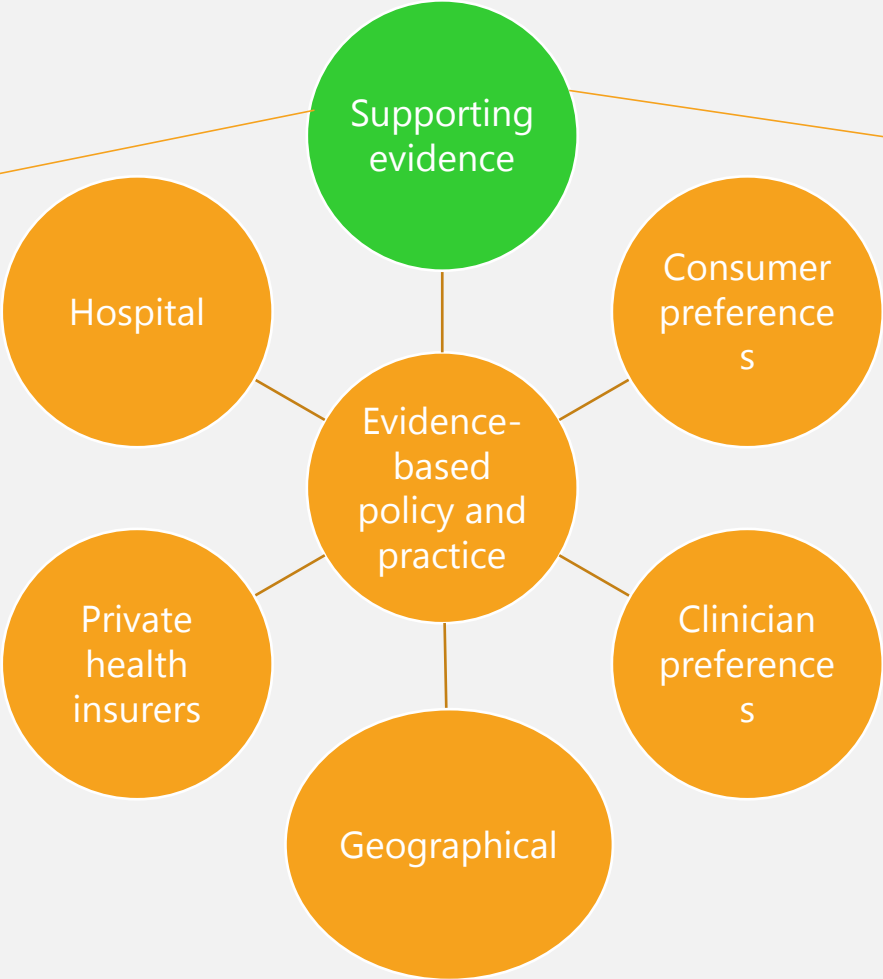
PBS Matched cohort study in private patients

1-TO-1 VS GROUP VS HOME PROGRAM



ENABLERS OF & BARRIERS TO POLICY & PRACTICE CHANGE

Lack of superiority consistent with +++ community-based studies

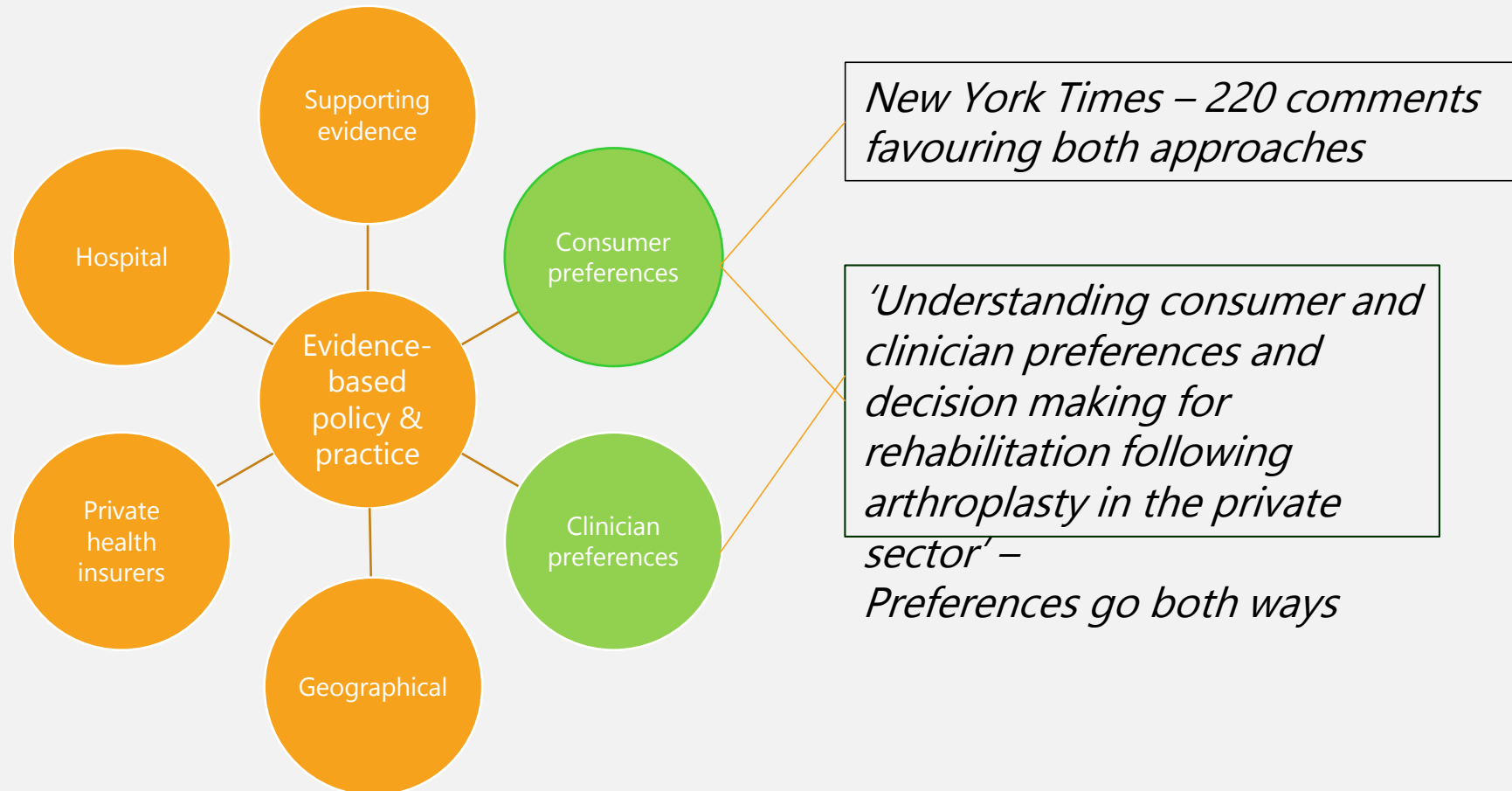


PBS Matched cohort study in private patients

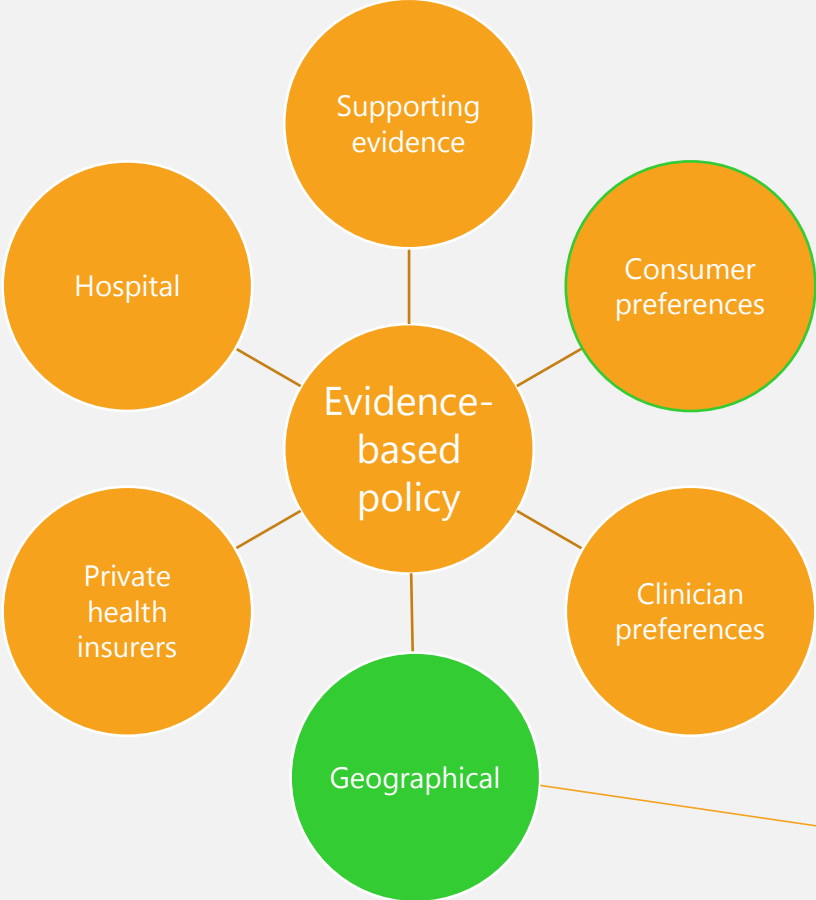
RESULTS, N = 258 (129 PAIRS) PRIVATE TKA RECIPIENTS

- No differences in OKS at Day 90 and Day 365 p
- No difference in EQVAS Day 35, 90 and 365 (trend in favour of no inpt gp)
- Significantly higher rehab provider charges for those who received inpt rehab (median diff \$9500)
- Significantly higher community rehab provider charges (excluding inpt rehab costs) in inpt group (median diff \$749)
- No difference in return to work outcomes

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State and regional differences in access to different rehabilitation options

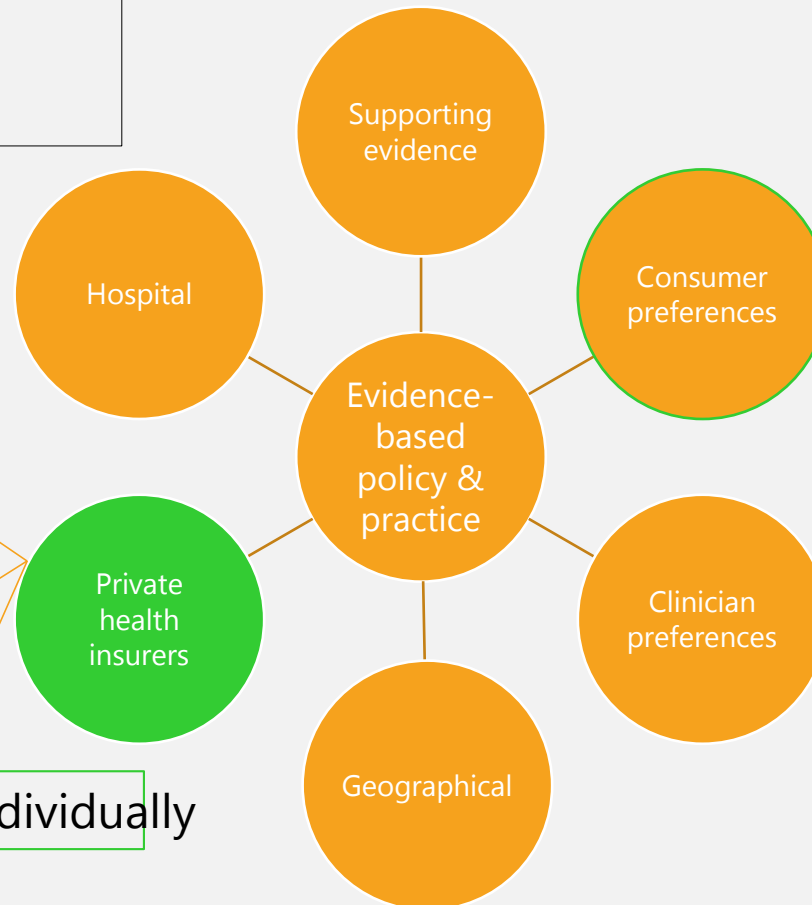
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The Australian March 15th 2017 –
Bupa, NiB, HCF, Medibank all
supported conclusions of HIHO

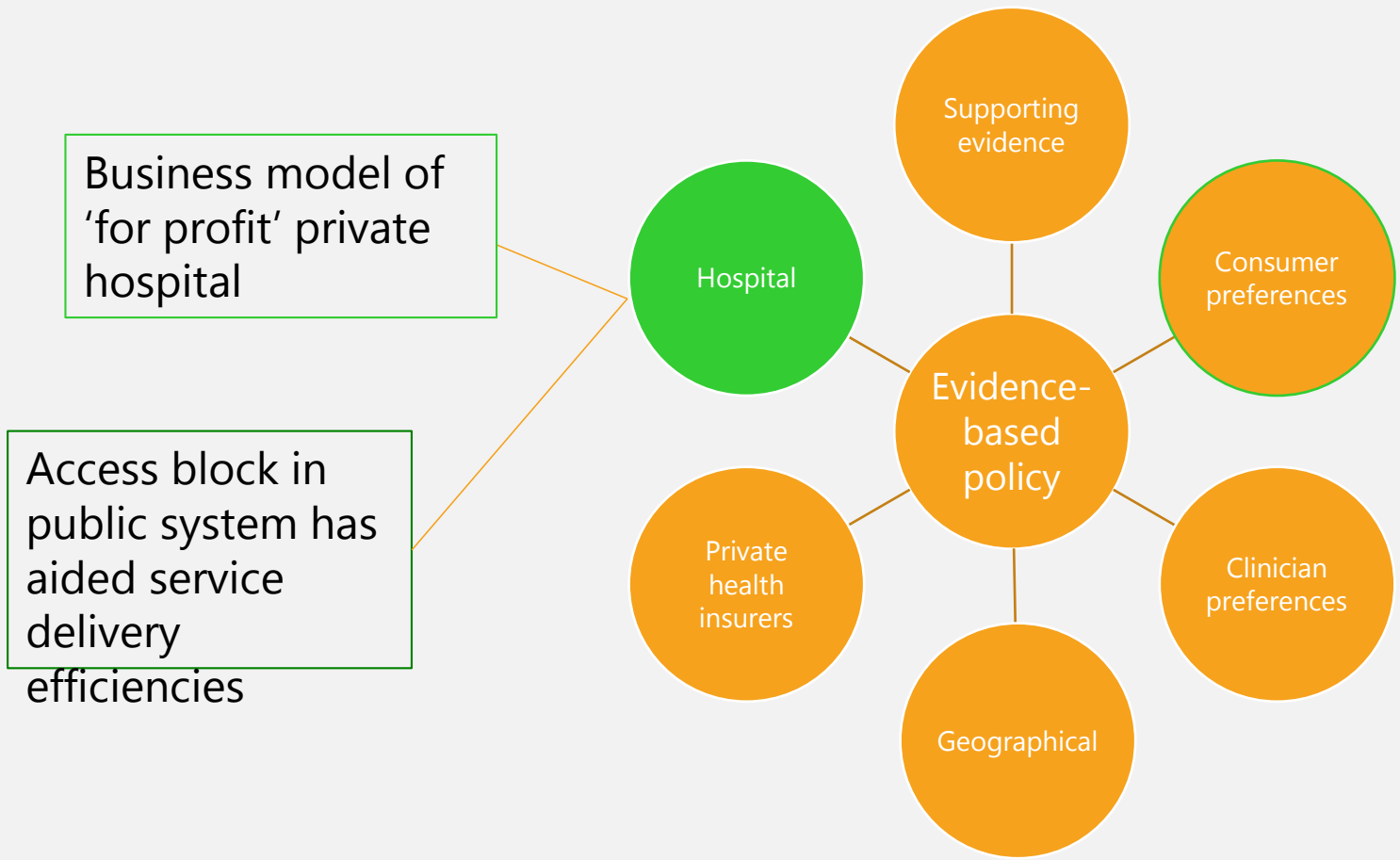
Desire to shift
consumer preferences
towards non-inpt
models

Existing policies
incentivise Inpt rehab
choice

Reluctance to change policy individually



ENABLERS OF & BARRIERS TO POLICY & PRACTICE CHANGE



EVIDENCE INTO POLICY & PRACTICE

Multipronged approach involving lots of stakeholders

- ❖ Education to change consumer and clinician preferences
 - Health insurer websites;
 - Models of Care; guideline generation; more research
- ❖ Acceptable rehabilitation alternatives offered by private health insurers provided at no gap – work with clinicians and hospitals
- ❖ Private hospitals refer to inpatient rehab on a needs basis and encourage patients to organize social supports prior to surgery

ACKNOWLEDGEMENTS

Our public patients and public hospitals and Hammondcare that allowed us to do this research