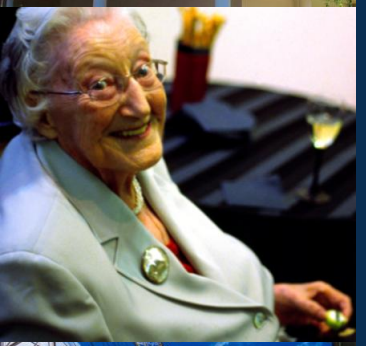








Scottish Partnership for Palliative Care, Annual Conference 2026, Edinburgh

28th October, 2026

Understanding the economic evidence on palliative care

What do we know, where should we go next?

Dr Peter May

Reader in Health Economics

Acknowledgements

Funding
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- **Is specialist palliative care in England cost-effective?**



Original article

PALLIATIVE MEDICINE

Specialist palliative care improves patient experience, reduces bed days and saves money: An economic modelling study of home- and hospital-based care

Palliative Medicine
1–10
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Mary Ann Liebert
A Part of Sage

Peter May[1,2], Elham Nikram[1], Therese Johansson[1], Gemma Clarke[3], Sarah Mitchell[3], Irene J. Higginson[1], Katherine E. Sleeman[1] and Fliss E. M. Murtagh[4]

NIHR | Policy Research Unit Palliative and end of life care

This session

- Context
  - (Very) brief introduction to economic evaluation
  - Current evidence base in palliative and end-of-life care (PEOLC)

- Recent paper for NIHR PRU
  - Methods
  - Results
  - Discussion



- Next steps and emerging challenges
  - Treatment effect heterogeneity, mechanisms of change
  - Provisional output from a simulation study

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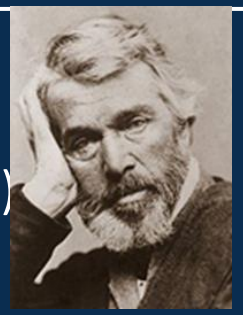
Peter May, Elham Nikram, Therese Johansson, Gemma Clarke, Sarah Mitchell, Irene J. Higginson, Katherine E. Sleeman and Fliss E. M. Murtagh

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Why economic evaluation?

"The dismal science."

– Thomas Carlyle* (1795-1881)





Q: Why do we need economics in PEOLC?

A: Scarcity – Available resources < Health-related demands

- Not an issue of budget but a fact of life
  - Decisions in allocation
  - We fund some things, not others
  - Every decision has an opportunity cost (next best option not funded)

- Imperative that services are a good use of scarce resources

* For more, see Thompson (2013)

How do we do economic evaluation?

- Economic evaluation has two components:

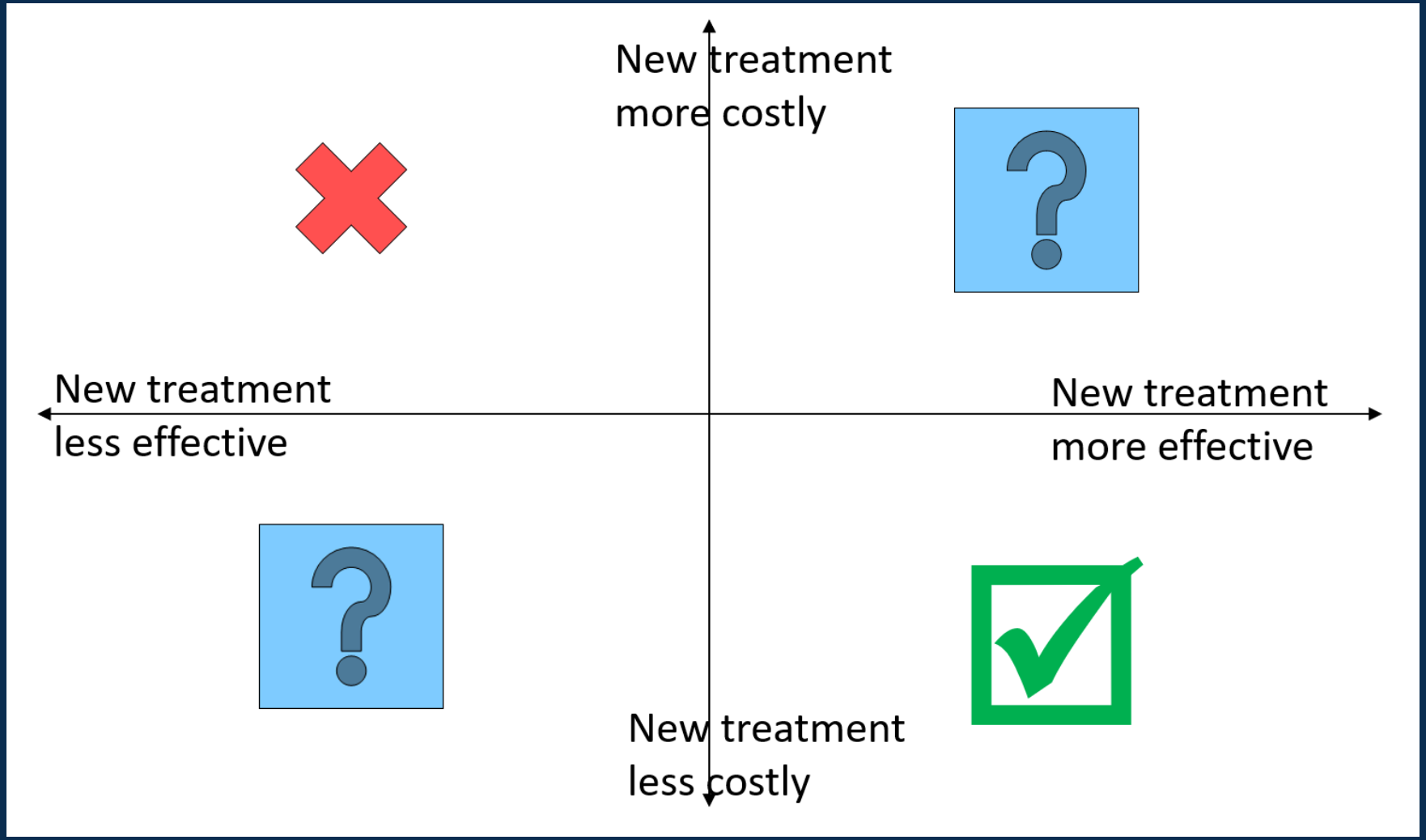
  - Measuring treatment effect on **costs**
    - Formal costs, e.g. hospital inpatient, outpatient, GP
    - Informal costs, e.g. help and care from friends or family

  - Measuring treatment effect on **outcomes**
    - Patient outcomes, e.g. survival, health-related quality of life
    - Caregiver outcomes, e.g. survival, health-related quality of life

  - ➢ Cost-consequence analysis
    - Cost-effectiveness, cost-utility, cost-benefit….

Economic evaluation

Cost-consequence analysis



Everyday economic evaluation

Cost-consequence analysis

SKY
LOGO

Everyday economic evaluation

- Full Sky subscription is ~£80 per month

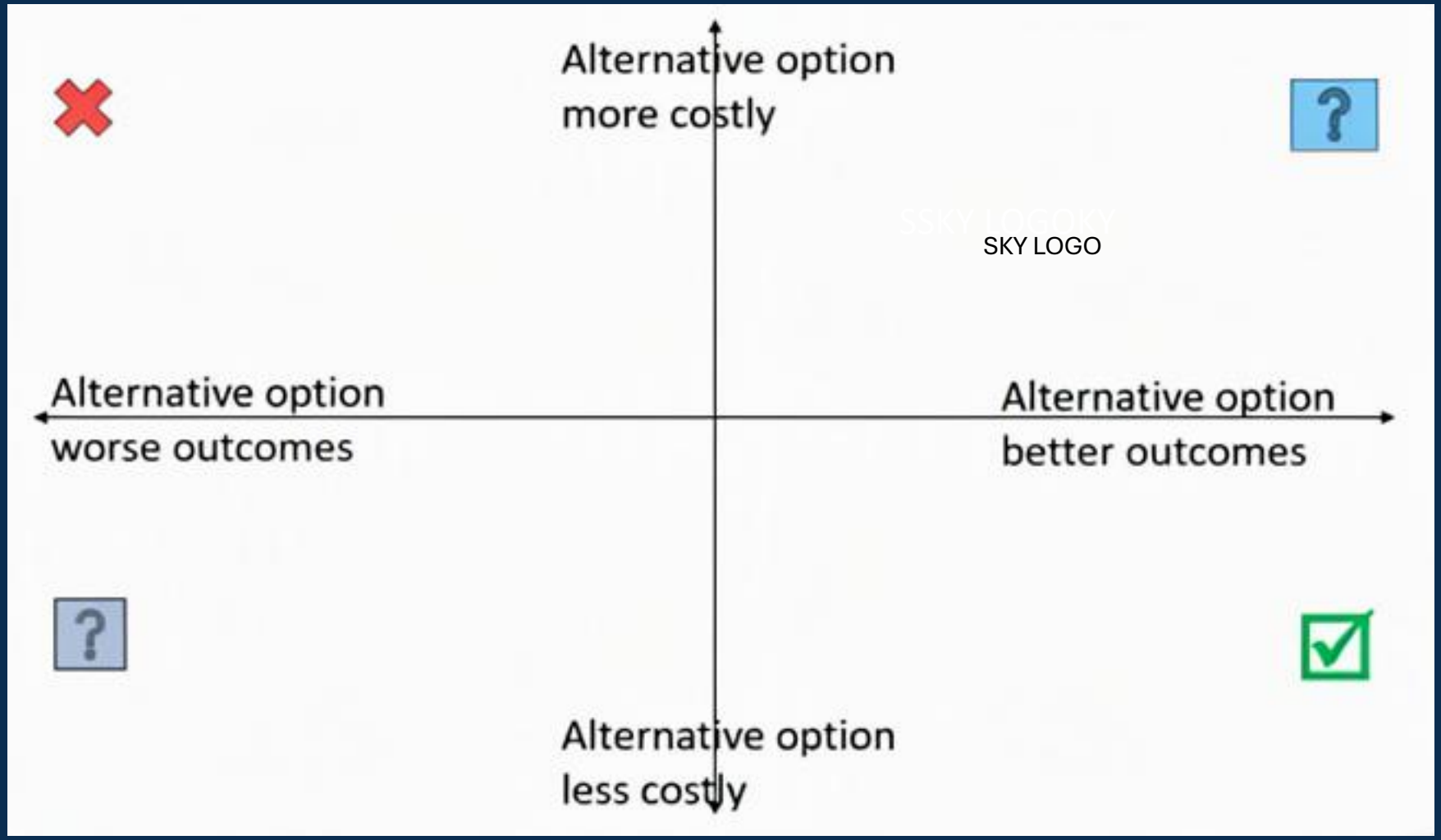
Everyday economic evaluation

- Full Sky subscription is ~£80 per month
  - £960 per year

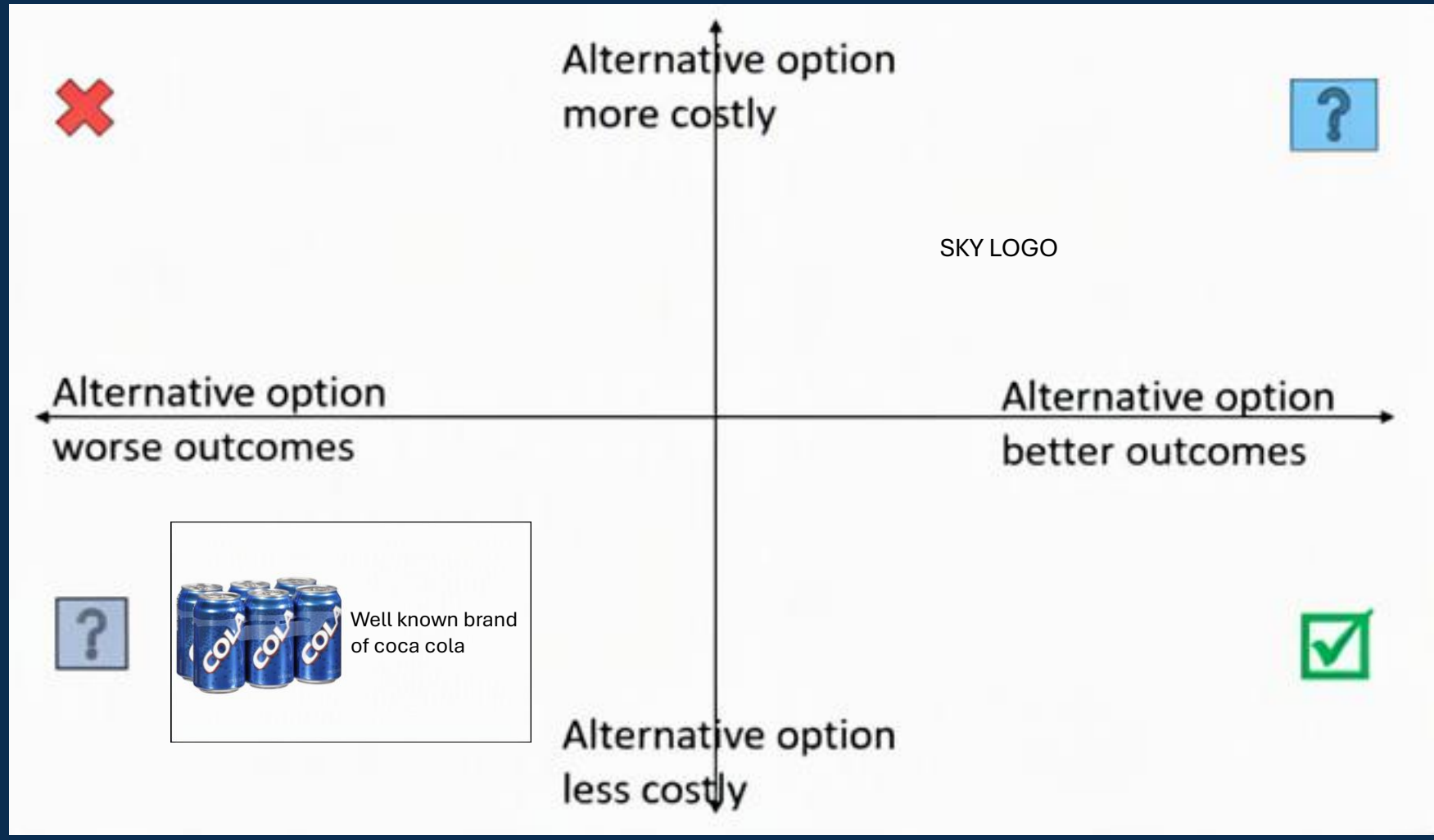
Everyday economic evaluation

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  - £17,820 over an 18-year childhood

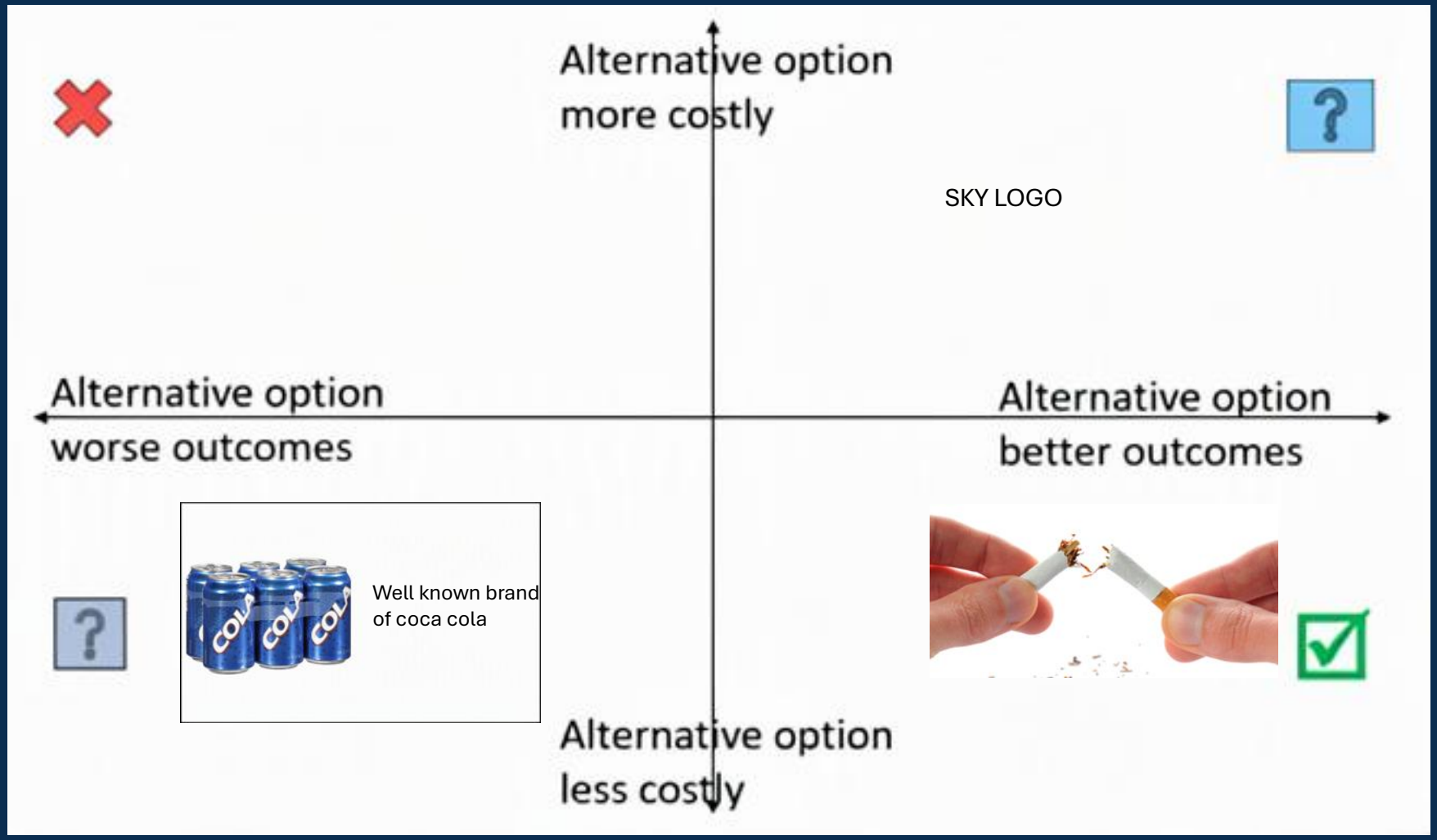
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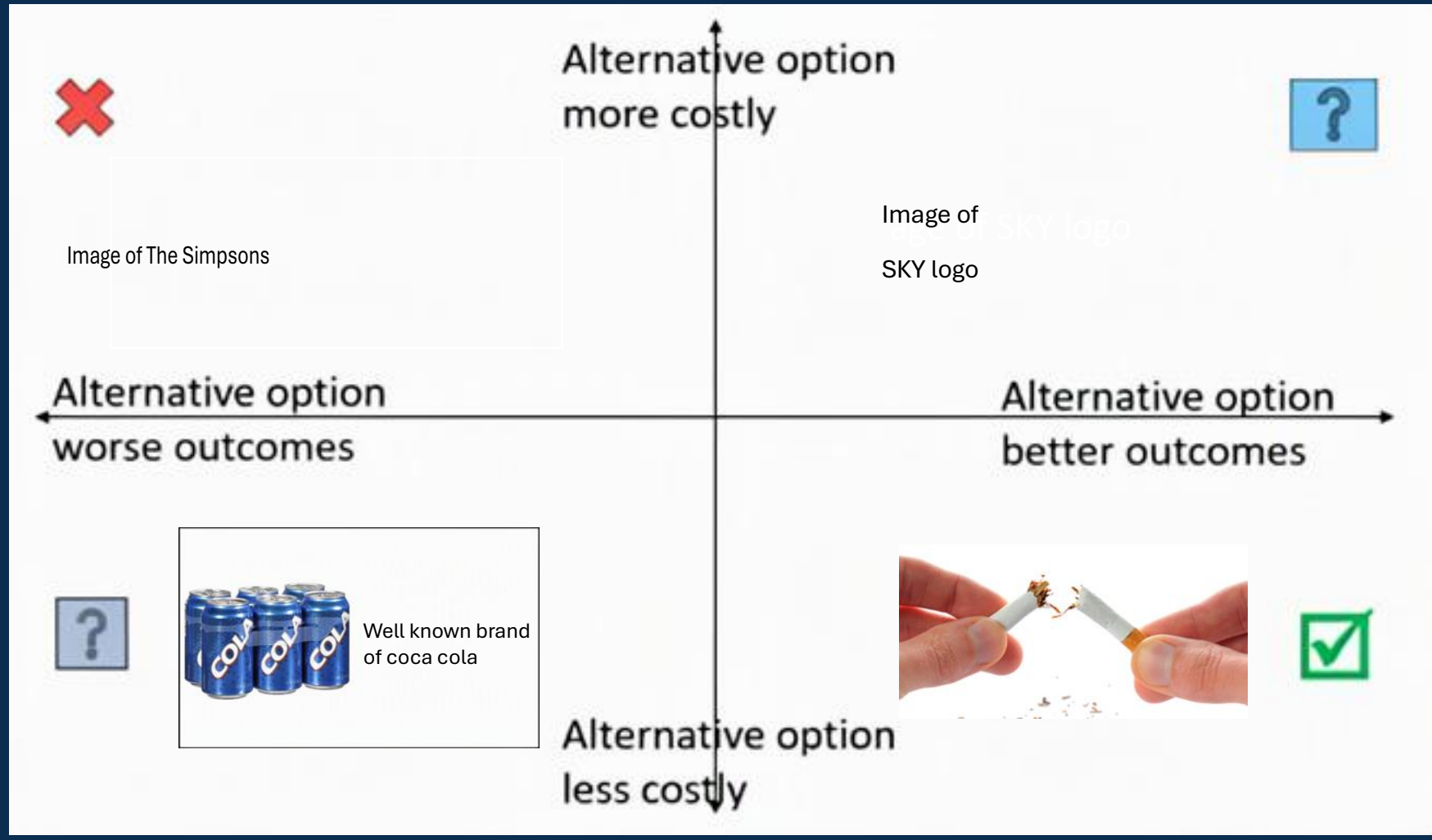
Everyday economic evaluation



Everyday economic evaluation



Everyday economic evaluation



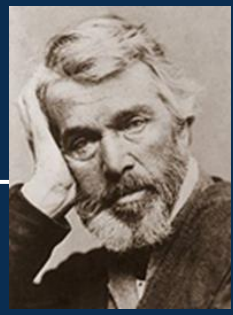
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  - £17,820 over an 18-year childhood

- It’s nice to have things we want
  - If we have the money, we can choose to spend it on Sky
  - **BUT** the decision has an opportunity cost – this money could instead go on a college fund, dental care, trumpet lessons…

Summary

"The dismal science." – Thomas Carlyle (1795-1881)



- Reality is dismal; scarcity a fact of life
  - Economic evaluation a tool to help manage (often very difficult) choices



- Rationing inevitable in all systems
  - More spending *per se* never the answer

- Our aim: does PC impact costs, outcomes compared to status quo?
  - Is it a good use of scarce resources?

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Evidence base on economics of PEOLC

- Large number of observational studies:
  - 46 papers to 2012 (Smith, 2014)
  - 43 reviews (!) to 2019 (Luta, 2021)
- Consistent story:
  - Cost-savings in home care, hospital care
  - Less evidence on inpatient hospice



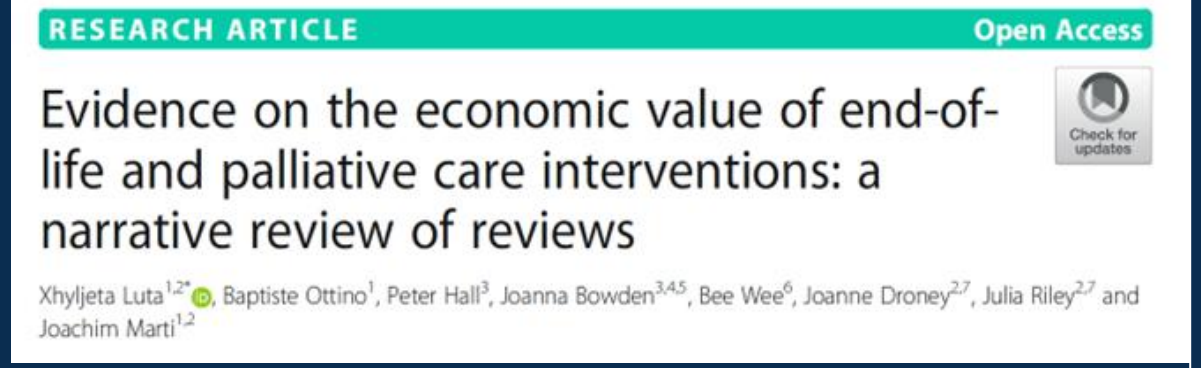
Review Article

PALLIATIVE MEDICINE

Evidence on the cost and cost-effectiveness of palliative care: A literature review

Palliative Medicine
2014, Vol 28(2) 130–150
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Samantha Smith[1], Aoife Brick[1], Sinéad O'Hara[1] and Charles Normand[2]



RESEARCH ARTICLE Open Access

Evidence on the economic value of end-of-life and palliative care interventions: a narrative review of reviews

Check for updates

Xhyljeta Luta[1,2*], Baptiste Ottino[1], Peter Hall[3], Joanna Bowden[3,4,5], Bee Wee[6], Joanne Droney[2,7], Julia Riley[2,7] and Joachim Marti[1,2]

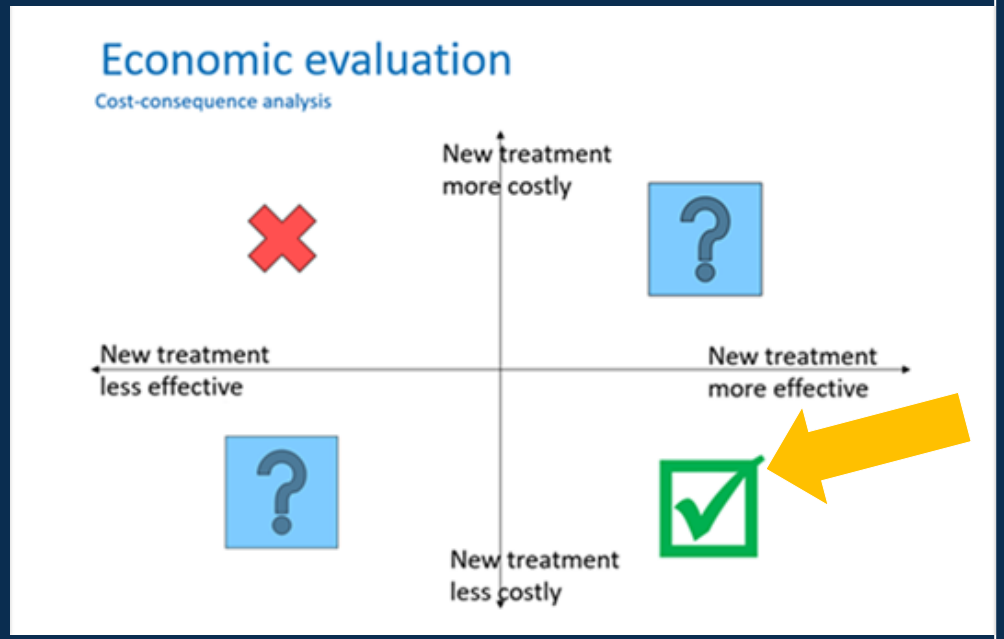
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  - Less so inpatient hospice
- Trial data show better outcomes
  - Pain, symptom scores
  - Death outside hospital



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  - 43 reviews (!) to 2019 (Luta, 2021)
- Consistent story:
  - Cost-savings in home care, hospital care
  - Less so inpatient hospice
- Trial data show better outcomes
  - Pain, symptom scores
  - Death outside hospital
- **So… what's the problem?**
  PC appears DOMINANT



Evidence base on economics of PEOLC

1. **Quality of cost evidence:**
   - **Secondary data studies, no quality threshold**
     - › Unobserved confounding
       - Preferences, proximity to death
     - › Sampling
       - Counting backwards versus counting forwards



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Evidence base on economics of PEOLC

1. **Quality of cost evidence:**
   - Secondary data studies, no quality threshold
     - › Unobserved confounding
       - Preferences, proximity to death
     - › Sampling
       - Counting backwards versus counting forwards

   - **Trial evidence more ambiguous**
     - › Improved QoL, reduced hospital deaths…
     - › … but not cost-effective

   This feels like mixed signals?




Review Article

Evidence on the cost and cost-effectiveness of palliative care: A

PALLIATIVE MEDICINE

Cochrane Library

Cochrane Database of Systematic Reviews

The effectiveness and cost-effectiveness of hospital-based specialist palliative care for adults with advanced illness and their caregivers (Review)

Bajwah S, Oluyase AO, Yi D, Gao W, Evans CJ, Grande G, Todd C, Costantini M, Murtagh FE, Higginson IJ

Effectiveness and cost-effectiveness of home palliative care services for adults with advanced illness and their caregivers (Review)

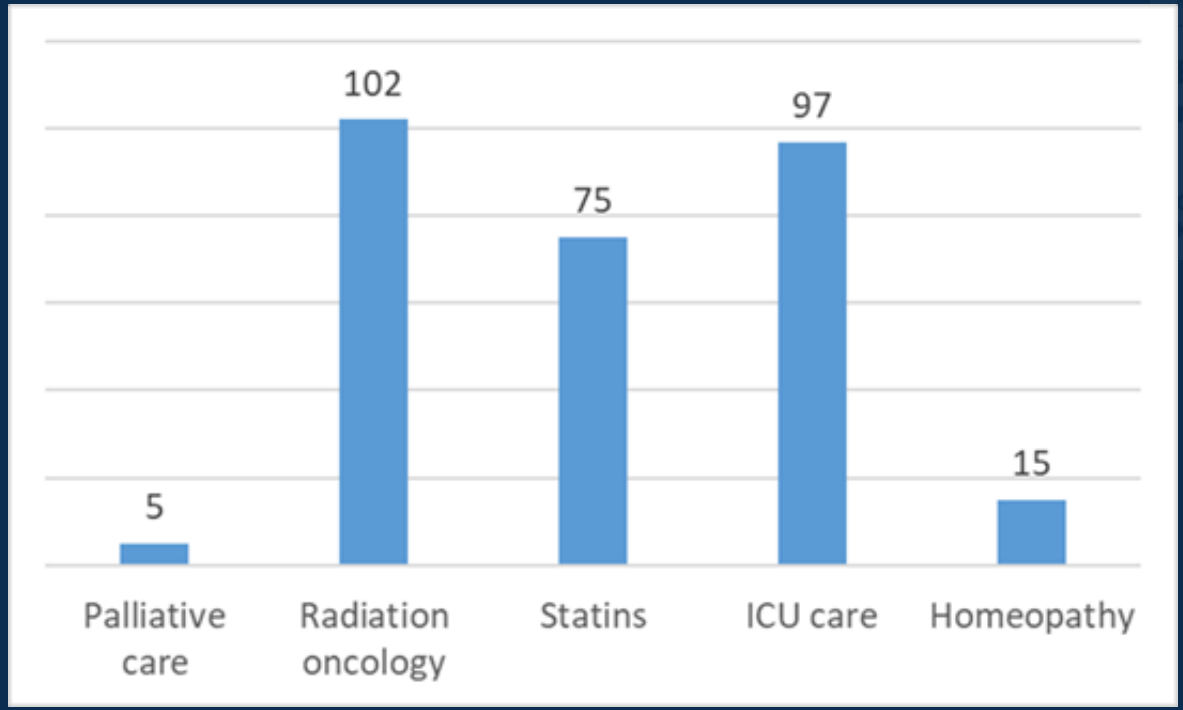
Gomes B, Calanzani N, Curiale V, McCrone P, Higginson IJ, de Brito M

Evidence base on economics of PEOLC

2. Lack of full cost-effectiveness studies:

- Mathew et al (2020)
- Parackal et al (2021)

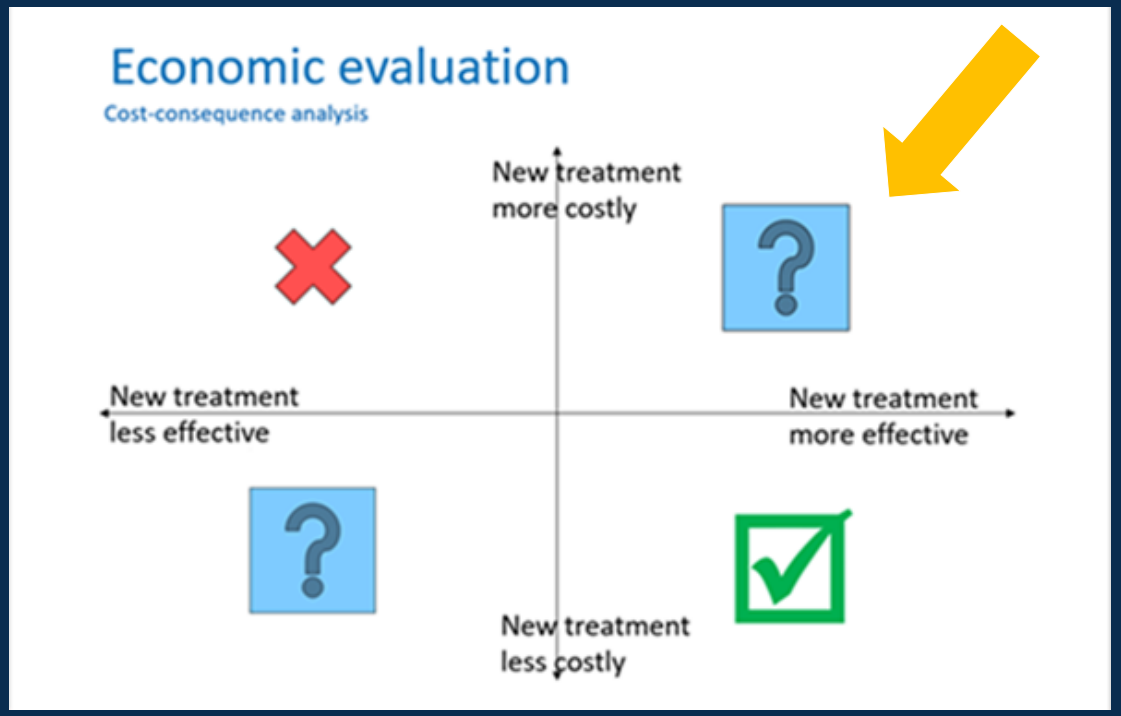
→ Historic lack of economic evaluations for all PEOLC



Number of economic evaluations, per systematic reviews
Fischer et al. (2026) finds evidence base is growing

Evidence base on economics of PEOLC

2. **Lack of full cost-effectiveness studies:**
   - Mathew et al (2020)
   - Parackal et al (2021)
   → Historic lack of economic evaluations for all PEOLC




Review Article

Economic Evaluation of Palliative Care Interventions: A Review of the Evolution of Methods From 2011 to 2019

Anna Parackal, HBSc, MSc[1], Karishini Ramamoorthi, HBSc, MSc[1], and Jean-Eric Tarride, BA, MA, PhD[1,2,3,4]

Review Article

Economic evaluations of palliative care models: A systematic review

Christine Mathew[1], Amy T. Hsu[1,2,3], Michelle Prentice[1,2], Peter Lawlor[1,4], Kwadwo Kyeremanteng[4,5], Peter Tanuseputro[1,4] and Vivian Welch[1,5]

Context – key points

- DHSC asked our NIHR Policy Research Unit (PRU):

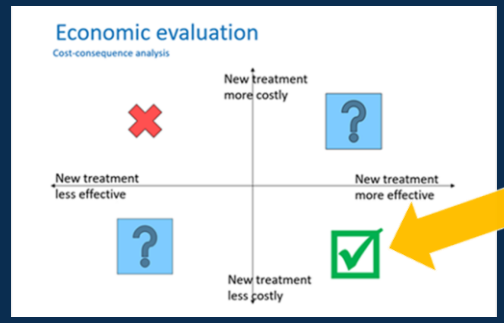
Q: Is specialist palliative care in England cost-effective?

A: It depends where you look

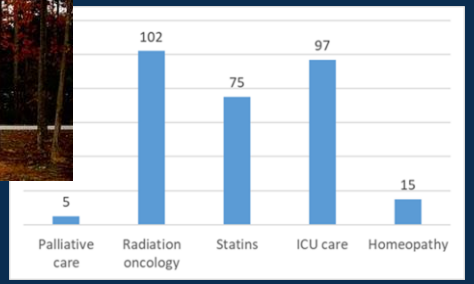
1 Unweighted evidence = **DOMINANT**, no-brainer

2 Quality-assured evidence = mixed signals

- Fewer hospital deaths, better QoL
- Cost-effectiveness unclear







- Neither very satisfactory, so we tried something new

This session

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  - **Methods**
  - **Results**
  - **Discussion**



Original article

PALLIATIVE MEDICINE

Palliative Medicine
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Mary Ann Liebert
A Part of Sage

Specialist palliative care improves patient experience, reduces bed days and saves money: An economic modelling study of home- and hospital-based care

Peter May[1,2], Elham Nikram[1], Therese Johansson[1], Gemma Clarke[3], Sarah Mitchell[3], Irene J. Higginson[1], Katherine E. Sleeman[1] and Fliss E. M. Murtagh[4]

- Next steps and emerging challenges
  - Treatment effect heterogeneity, mechanisms of change
  - Provisional output from a simulation study

Rationale and aim

- Cochrane review *cost-effectiveness* evidence mixed, but…
- …evidence on SPC effects for **place of death** much clearer
  - Both home and hospital SPC improve odds of dying at home
  - Also moderate QoL effects
- *If* place-of-death effect is true, there is an economic implication
  - Fewer days in hospital, lower hospital costs
  - More days at home, higher community care costs & more informal care
  - Costs associated with the intervention itself

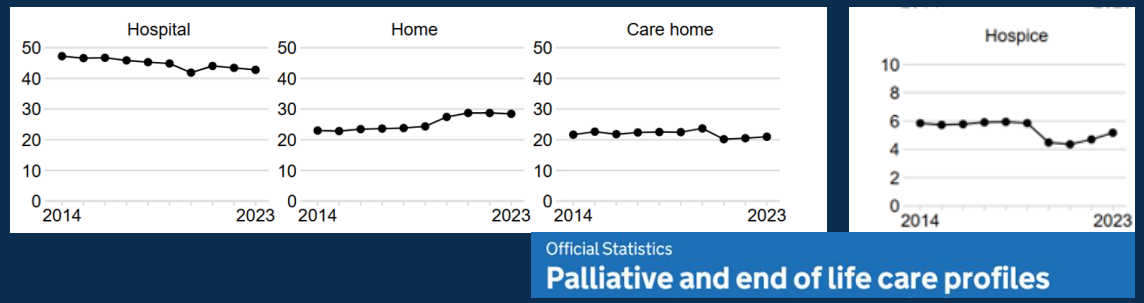
    (plus the QoL and PoD effects)



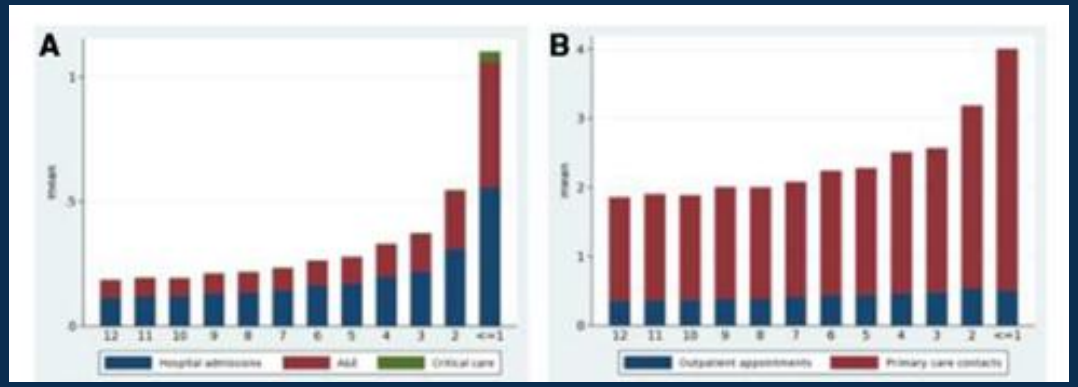
→ What is the cost-effectiveness of hospital and home SPC, *if* place-of-death effect is true?

Methods

- We know where people die



- <u>And</u> where they spend time beforehand
  - Frequency of admissions
  - Length of admissions



A Hospital care (Admissions, ED, ICU)

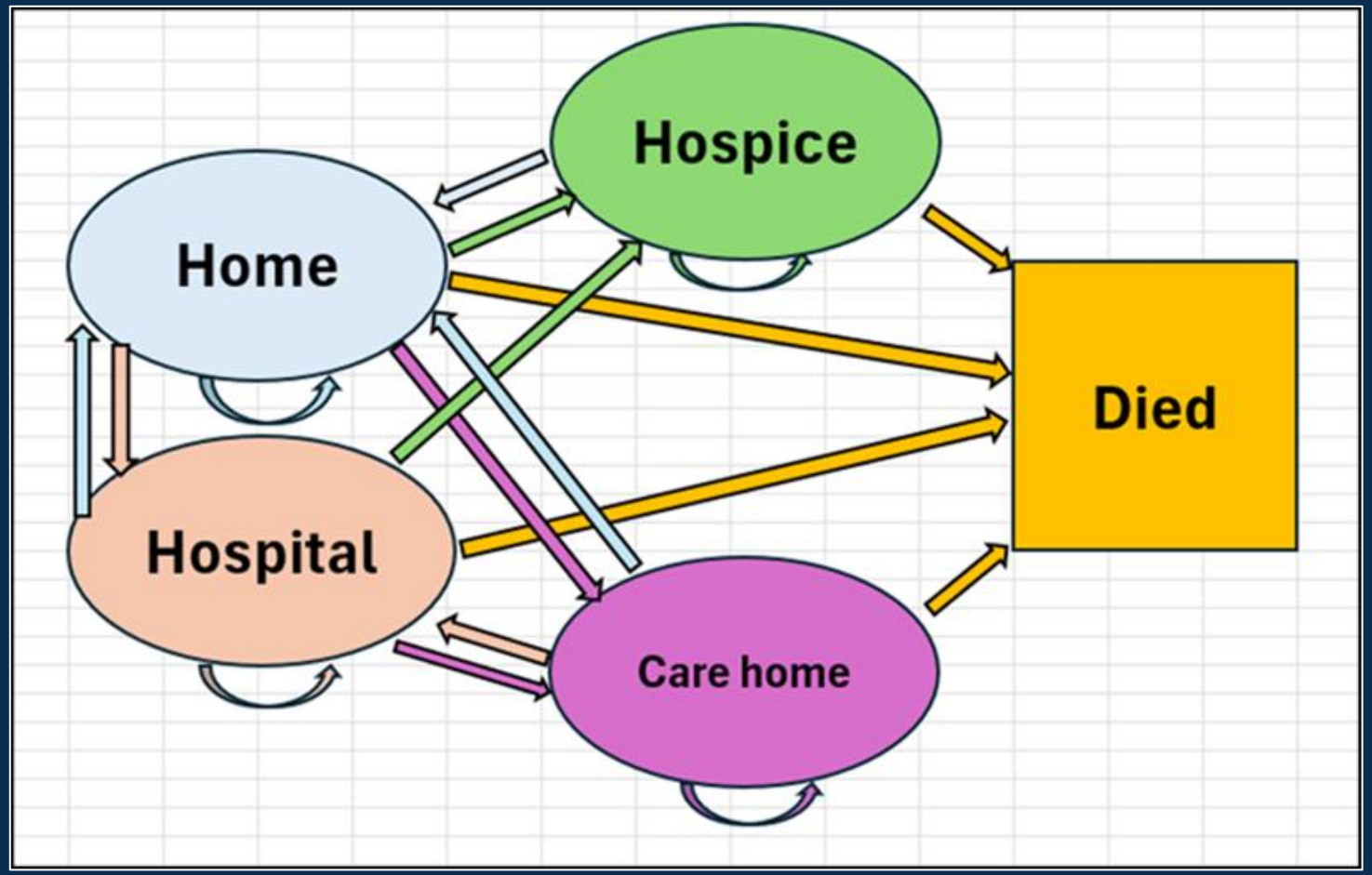
B Outpatient and primary care

NHS England

(Luta et al., 2020)

Methods

- Using these data, we model patient flow ('decision modelling')



- We *know* where people spend time, for how long, and we *know* where they die
  i. Frequency of admissions to a place
  ii. Length of stay in a place
  iii. Deaths in a place
- Each arrow has a probability: on a given day, what's pr(→)?
- For a given population, only one set of pr(→) can satisfy all means [i to iii]
- For community-dwelling† adults with poor prognosis*, we infer pr(→):
  - **ONS data on place of death**
  - **NHS hospital episode statistics**
  - **Survey data on care home, hospice**
- T/ effect in Cochrane reviews on PoD; costs, QoL in each place from literature

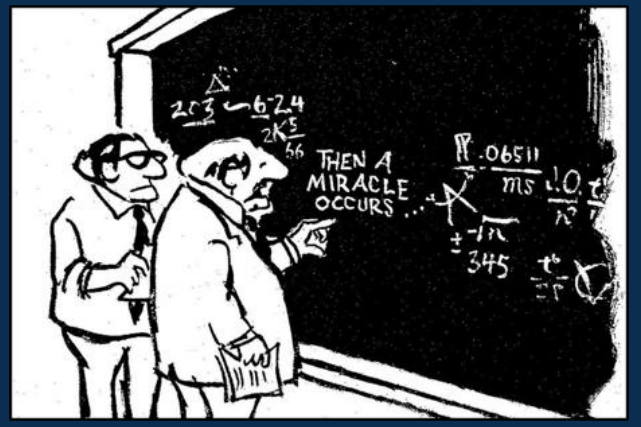
*†We model hospital and home SPC **separately**, with different utilisation and survival reflecting different patterns of HU and PoD*

** Poor prognosis = mean survival 90 days (Johnson et al., 2024); survival fixed in all analyses*

Methods

Data not shown

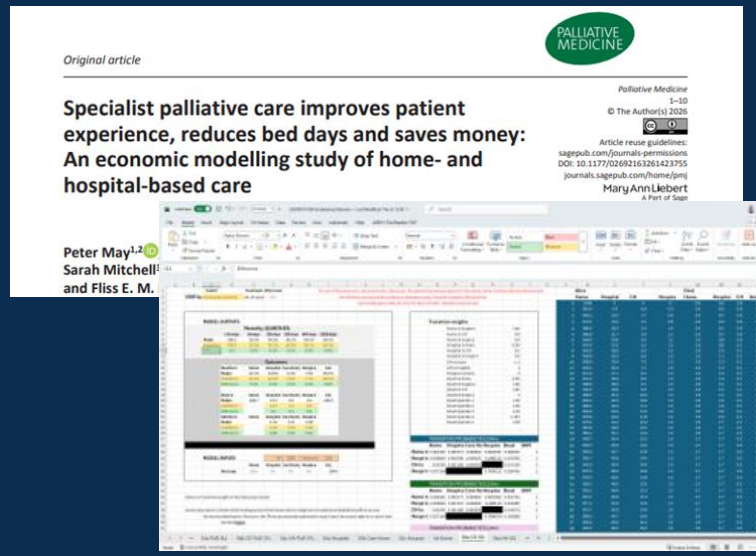
- Parameterise and validate the model
- Redo each stage for home and hospital SPC evaluations separately
- Cost and QoL per place per day from the literature
- Uncertainty using 95% CIs of odds ratios (ORs) in Cochrane reviews



"I think you should be more explicit here."

Other methodological considerations

- Cohort model, lifetime horizon, survival fixed by construction
- System perspective with sensitivity analysis including informal costs
- Outcomes as quality-adjusted life years (QALYs)
  - 1 QALY = 1 year lived in full health
  - Systems typically pay ~£25,000 per QALY



Results

Main results: individual-level estimates

Home SPC	ATE (95% CI)
Costs	-£7,908 (-£18,044 to £395)
QALYs	**0.035 (0.033 to 0.037)**
ICER (/QALY)	**DOMINANT** -£227,781 (-£482,524 to £12,151)
Hospital SPC	**ATE (95% CI)**
Costs	**-£6,480 (-£11,482 to -£1,671)**
QALYs	**0.033 (0.031 to 0.035)**
ICER (/QALY)	**DOMINANT -£196,696 (-£331,714 to -£53,294)**

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ICER (/QALY)	**DOMINANT -£196,696 (-£331,714 to -£53,294)**

- If we take the Cochrane reviews at face value, both SPC models appear to offer better outcomes at lower cost: '**DOMINANT**'
- Estimates from trials so **intervention is timely, good adherence**

Results

Secondary analysis: Population-level estimates

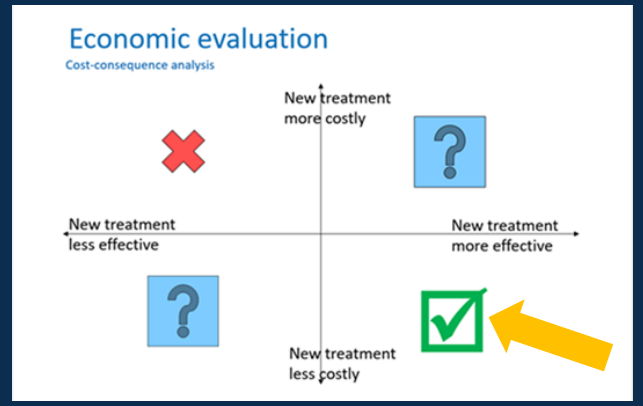
Home SPC	ATE (95% CI)
Hospital deaths	-17,098 (-30,681 to -2,985)
Hospital bed days	-1,005,179 (-1,928,774 to -244,164)
Formal costs	-£533,147,283 (-1,220,047,540 to 31,199,212)
Hospital SPC	**ATE (95% CI)**
Hospital deaths	-3,906 (-6,269 to -1,627)
Hospital bed days	-491,601 (-789,873 to -205,748)
Formal costs	-£283,872,364 (-503,411,325 to -73,454,290)

- We moderate the individual-level treatment effects to incorporate dose

Discussion

- **Based on best-available evidence:**

  - Home- & hospital-based SPC highly cost-effective for NHS



- Key driver is reduced hospital bed days, estimated by modelling implied utilisation in the context of place of death
- re: NHS Ten Year Plan - support the shift from acute to community care
- SPC also improves HRQoL, death in preferred place



- We interpret this as SPC improving complex decision-making in care
- Sensitivity analyses (not shown) find that unpaid care costs and survival curves specification don’t change main results

Discussion

- **Strengths:**

  - We no longer lack ‘high quality’ evidence on cost-effectiveness of SPC

    → If Cochrane place of death estimates are true, our results are ~true

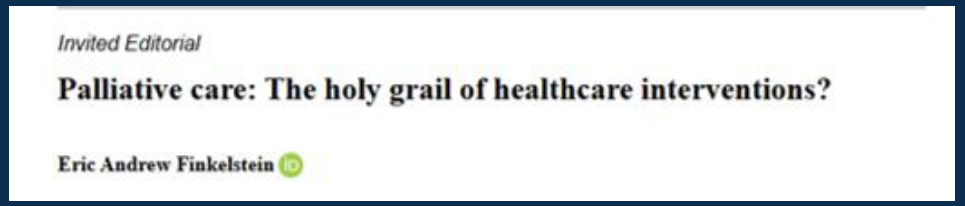
  - Approach can be applied in other countries

    → We just need utilisation near EOL, place of death, SPC receipt

Discussion

- **Limitations:**

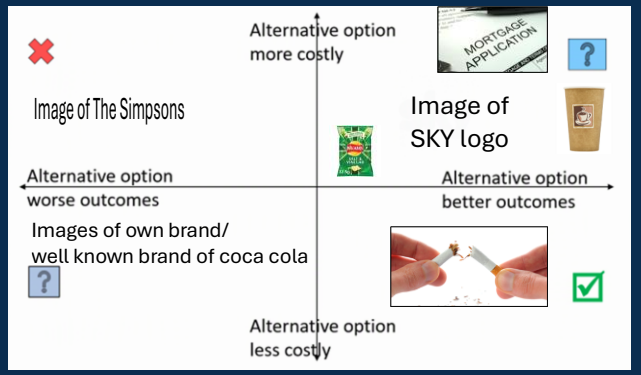
  - Credibility: not many choices in healthcare (or in life) that are no-brainers
    - » Most choices we make are spending more to get more
    - » Most interventions improve outcomes for a higher cost



Invited Editorial

Palliative care: The holy grail of healthcare interventions?

Eric Andrew Finkelstein



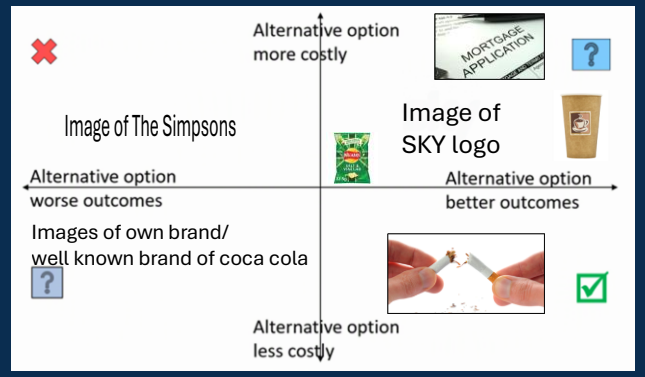
  - Is Cochrane review evidence applicable to SPC in England?
    - » If no, then we are back to square one (and should get our own estimates)
    - » If yes, estimates come from the mean but for whom is this difference being made?
    - » Treatment effects fixed across horizon but place-of-death effects vary by proximity to death

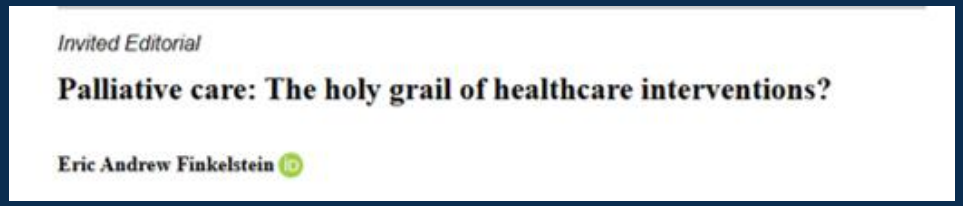
  - What about those not getting SPC currently?
    - » Who are they? Would we expect similar results if we expanded access at flick of a switch?

Discussion

- **Limitations:**

  - Credibility: not many choices in healthcare (or in life) that are no-brainers
    - » Most choices we make are spending more to get more
    - » Most interventions improve outcomes for a higher cost





Invited Editorial

Palliative care: The holy grail of healthcare interventions?

Eric Andrew Finkelstein

  - Is Cochrane review evidence applicable to SPC in England?
    - » If no, then we are back to square one (and should get our own estimates)
    - **» If yes, estimates come from the mean but for whom is this difference being made?**
    - **» Treatment effects fixed across horizon but place-of-death effects vary by proximity to death**

  - What about those not getting SPC currently?
    - » Who are they? Would we expect similar results if we expanded access at flick of a switch?

This session

- Context
  - (Very) brief introduction to economic evaluation
  - Current evidence base in palliative and end-of-life care (PEOLC)

- Recent paper for NIHR PRU
  - Methods
  - Results
  - Discussion


Original article

Specialist palliative care improves patient experience, reduces bed days and saves money: An economic modelling study of home- and hospital-based care

Peter May, Elham Nikram, Therese Johansson, Gemma Clarke, Sarah Mitchell, Irene J. Higginson, Katherine E. Sleeman and Fliss E. M. Murtagh

- **Next steps and emerging challenges**
  - **Treatment effect heterogeneity, mechanisms of change**
  - **Provisional output from a simulation study**

Work in progress: simulation study

Context

- Research Question: So, is SPC the 'holy grail'?

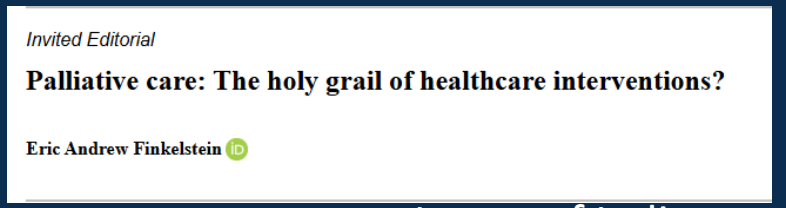


Image of Indianna Jones

- Our PRU/*Pal Med* paper used aggregate data to get mean estimates
  - If Cochrane review place of death effects are true on average for people in England with serious illness
- But reasonable to doubt 'true-ness' and important to explore distribution behind the 'average'
- In particular, when modelling place-of-death effects
  - SPC trial participants more likely to want SPC, to die at home, than general population
  - SPC propensity to support home death not fixed, likely linked to proximity to death
- Q: What happens if SPC effect on place of care is only true if:
  - Preferred place of death ≠ Hospital
  - Patient is in the last x days of life (where x is unknown to the clinical team)

Work in progress: simulation study

Methods

- Simulation study evaluating **hospital SPC**:

  - Synthesise a dataset of 25,000 'individuals' using publicly available data

    -> Age, sex

    -> Race, ethnicity

    -> Deprivation

    -> Diagnoses

    -> Preferred place of death, timing of hospital SPC receipt (realistic, not trial-based)

    -> Outcomes: length of stay, place of death, survival

  - Apply our *Pal Med* treatment effects* on place of care under four scenarios:

  (a) Works for everyone, like in the paper; (b) Only works if preferred place of death ≠ Hospital

  (c) Only works if person in LYOL; (d) Both (b) and (c)

(nb we are exploring a question in principle, not generating real-world evidence)

*QoL effects always applied

Work in progress: simulation study

Results

Scenario: who benefits*?	Mean treatment effect estimate (95% CI)		
	Costs	QALYs	Cost per QALY (ICER)
(a) Everyone	-£1,077 (-1858 to 498)	+0.02 (0.017 to 0.031)	DOMINANT
(b) Preferred PoD ≠ Hospital	-£588 (-1858 to 498)	+0.02 (0.016 to 0.028)	DOMINANT
(c) In LYOL	+337 (-270 to 1805)	+0.02 (0.015 to 0.024)	£18,064
(d) Both (b) and (c)	+633 (-60 to 2068)	+0.02 (0.014 to 0.023)	£34,226

- As we restrict population who benefits (but not those who get SPC), probability of cost-effectiveness becomes less clear (but still plausible)

*effect on place of care, QoL effects always applied

Work in progress: simulation study

Discussion

- Restricting mechanism by preferred place of death has little effect

  - Potential to explore equity implications, but likely modest also [data not shown]

- Restricting mechanism to near EOL dampens effect but still cost-effective

  - Potential to model this in other ways, e.g. L2YOL or with a 'dose effect' by proximity to death

- Both together (scenario (d)) challenges cost-effectiveness more seriously

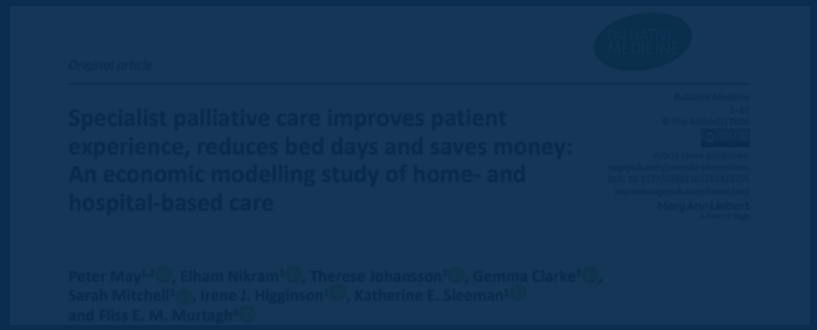
Next steps

- Further investigation of these issues, as well as those *not* getting SPC, to inform primary research studies on how and for whom SPC changes patterns of care

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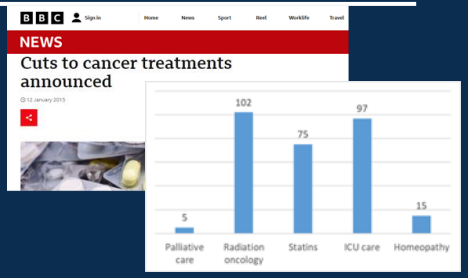
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- **In conclusion**

In conclusion…

- Economic evidence critical to long-term sustainability of PEOLC services
- Historically, tiny evidence base relative to health and fiscal importance



- Our study made new use of available data – with promising implications
- And evidence base is growing all the time
- Some residual scepticism warranted – holy grails are uncommon

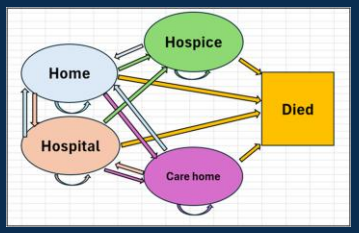


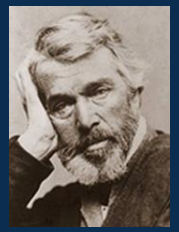
Image of Indianna Jones

- <u>But</u> QoL evidence clear, costs are high

Cochrane Library

  - Small changes to probability of hospital admission and/or discharge => cost-effectiveness

- Better understanding needed of <u>*mechanisms*</u> of effect, as well as those who get SPC and benefit, those who get SPC and don't, and those who don't get SPC at all
  - Needs growing fast, more capacity and more research needed to resist the 'dismal'





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