IAA AAI

SECTION COLLOQUIUM 2019

THE MODERN ACTUARY - CHALLENGE • INFLUENCE • LEAD

ASTIN • IAAHS • IAALS • IACA • PBSS

2 - 5 April
2019
Cape Town
South Africa
CTICC

www.colloquium2019.org.za

Hosted by
ACTUARIAL SOCIETY OF SOUTH AFRICA

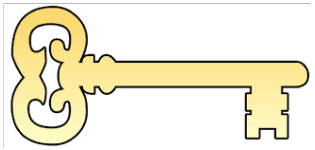
TARIRO FINANCIAL SERVICES (PTY) LTD

IMPAIRED LIVES INSURABILITY:

DAWN OF A NEW ERA

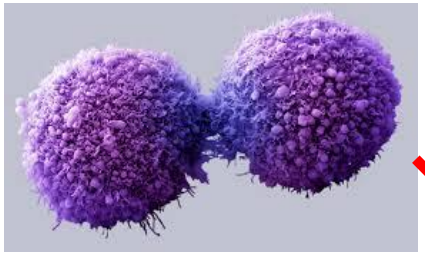
SECTION COLLOQUIUM 2019

AGENDA

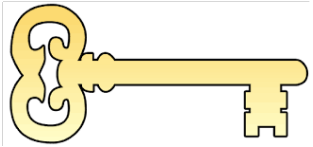


- Explore the nature of longevity improvements
- History and milestones of longevity improvements
- Implications
- Applications
  - Impaired life insurance

What is the need that we seek to address

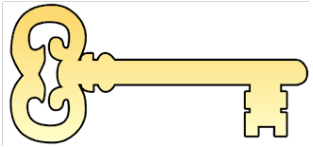


NATURE OF LONGEVITY IMPROVEMENTS: Traditional view



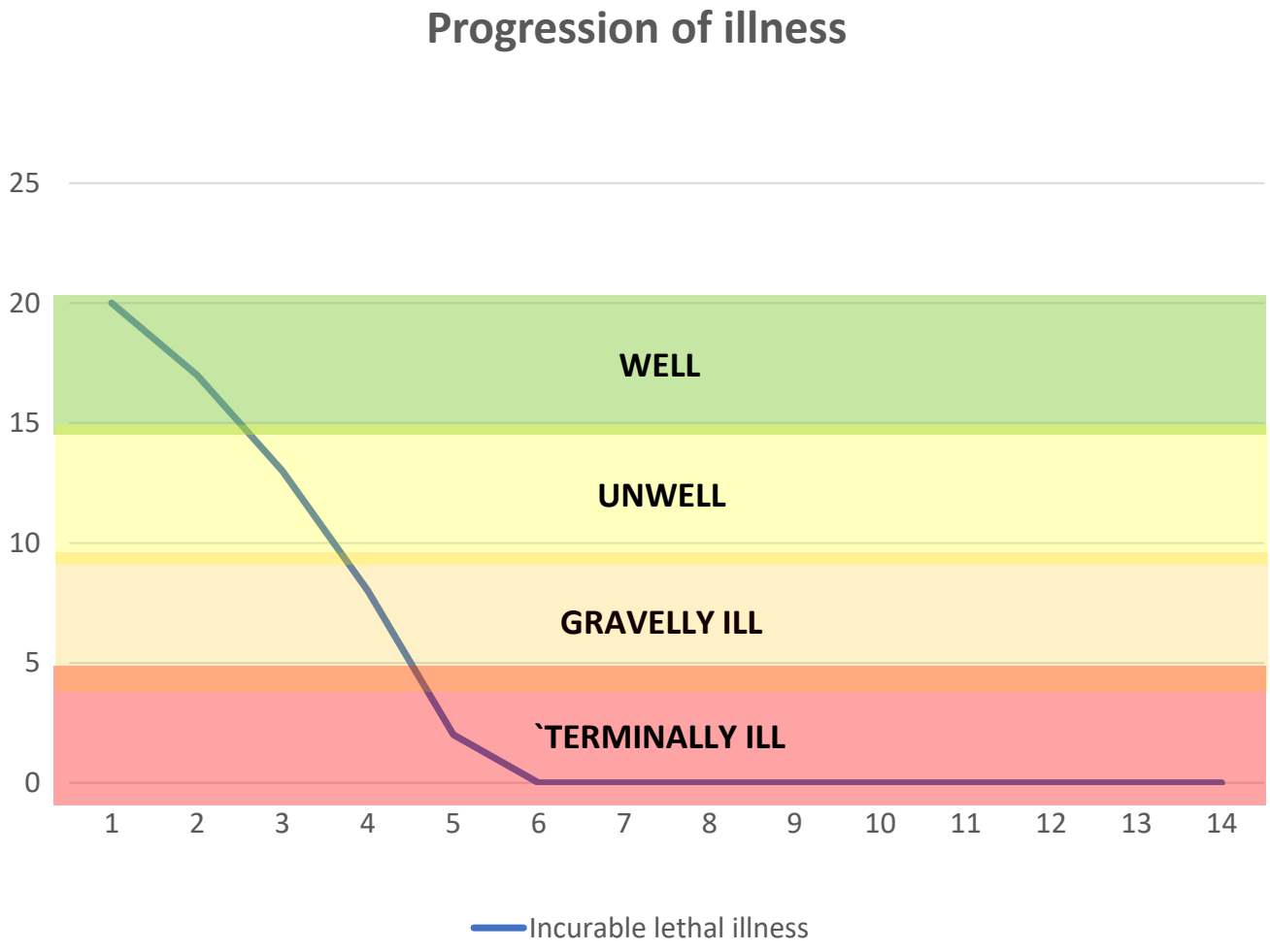
- By cause of death
- By age ranges at which improvements take place

NATURE OF LONGEVITY IMPROVEMENTS: Alternative view



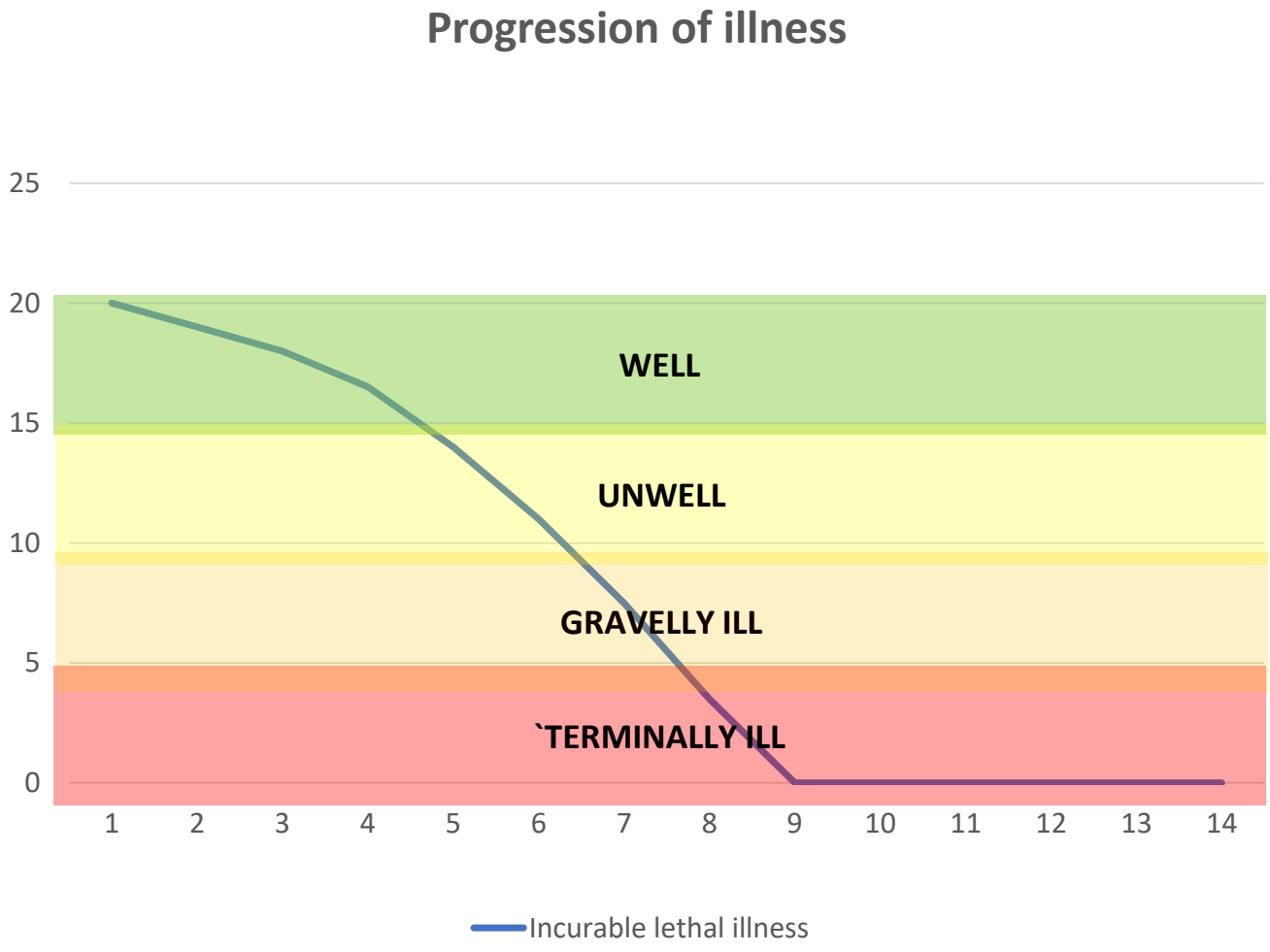
- Analyse improvements into two parts
  - Changes in disease-specific incidence rates
  - Changes in survival rates of those afflicted by these diseases

LIFE CYCLE OF MORBIDITY



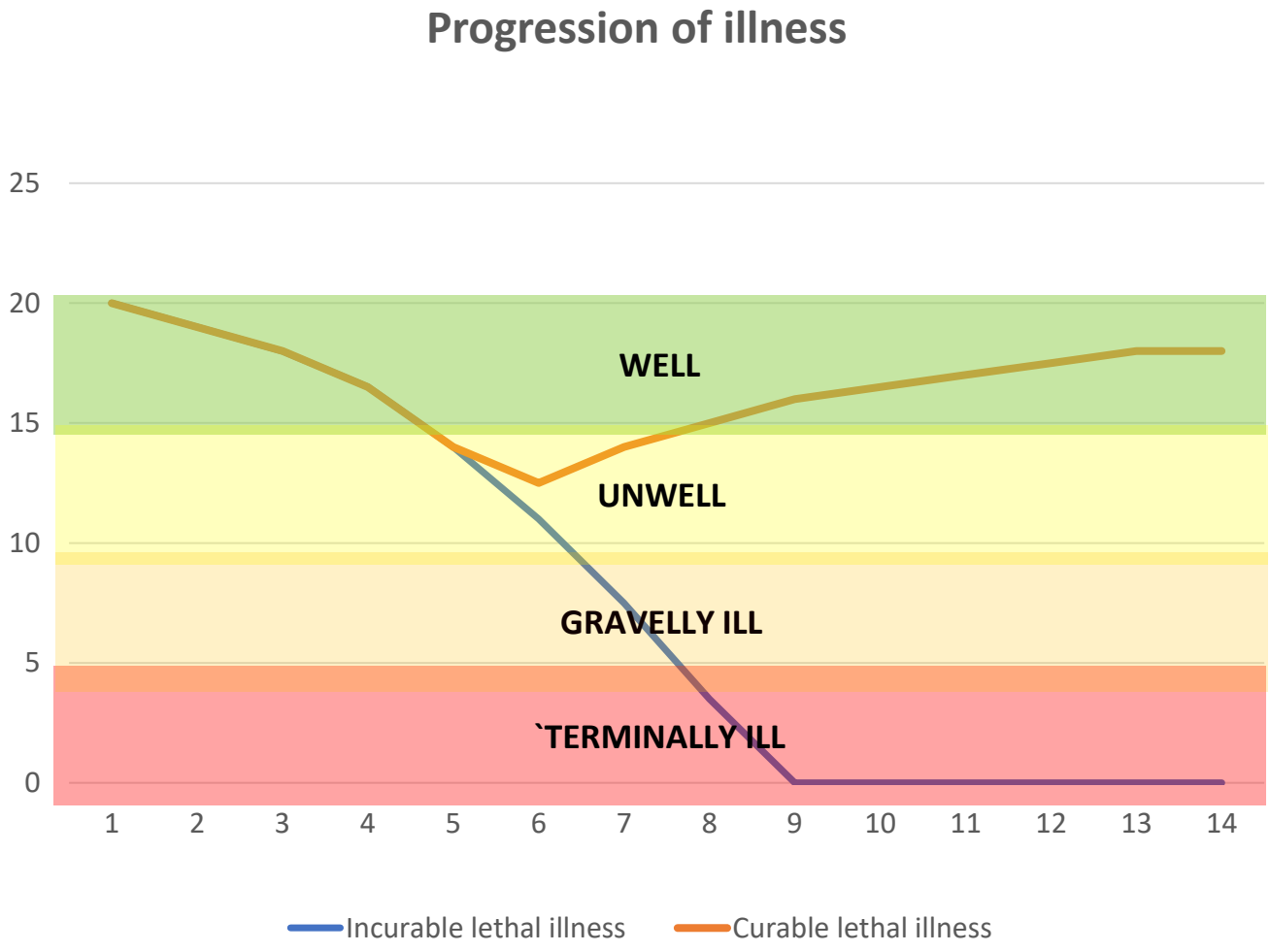
Hosted by
ACTUARIAL SOCIETY OF SOUTH AFRICA
SECTION COLLOQUIUM 2019

LIFE CYCLE OF MORBIDITY

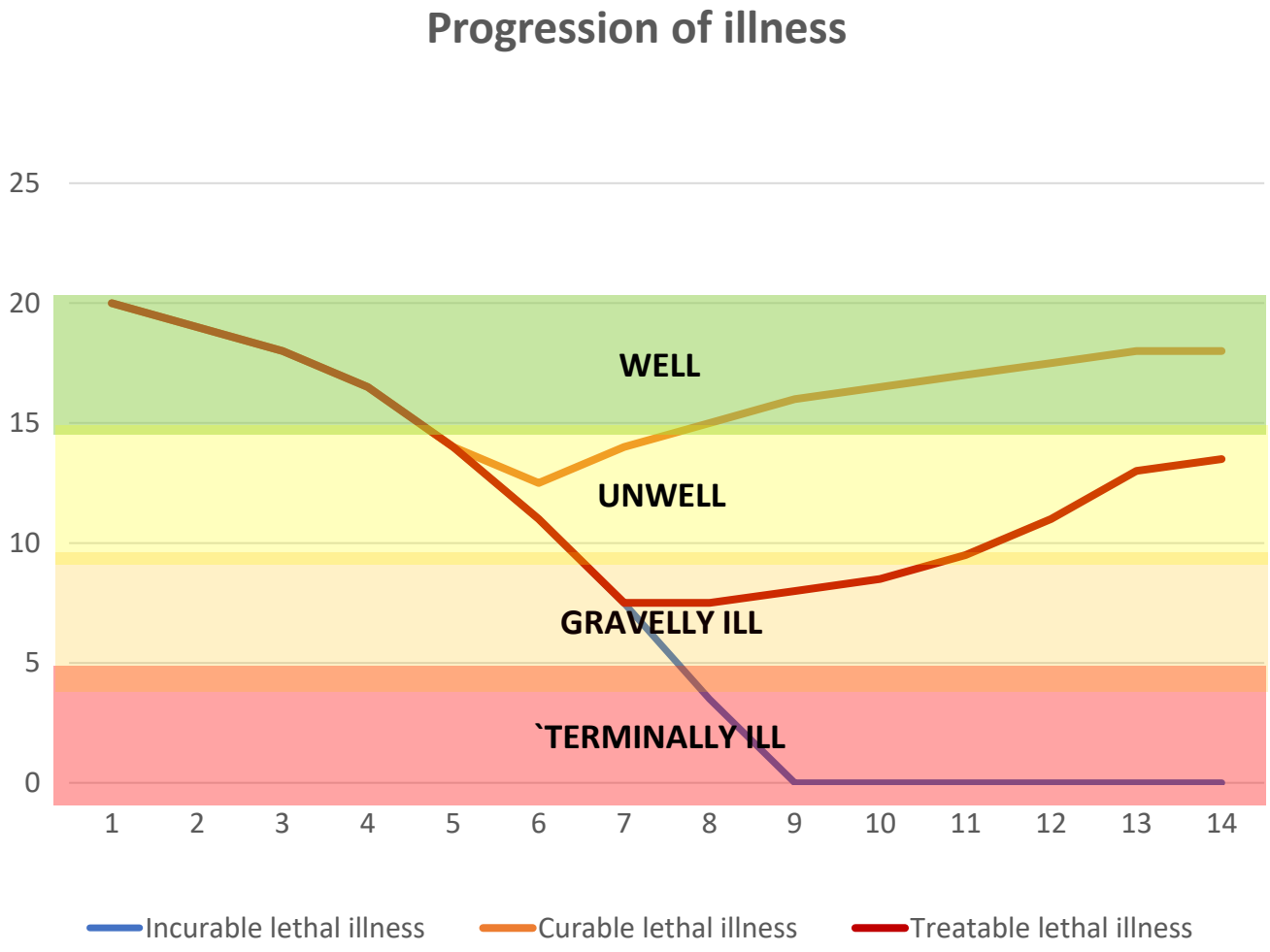


Hosted by
ACTUARIAL SOCIETY OF SOUTH AFRICA
SECTION COLLOQUIUM 2019

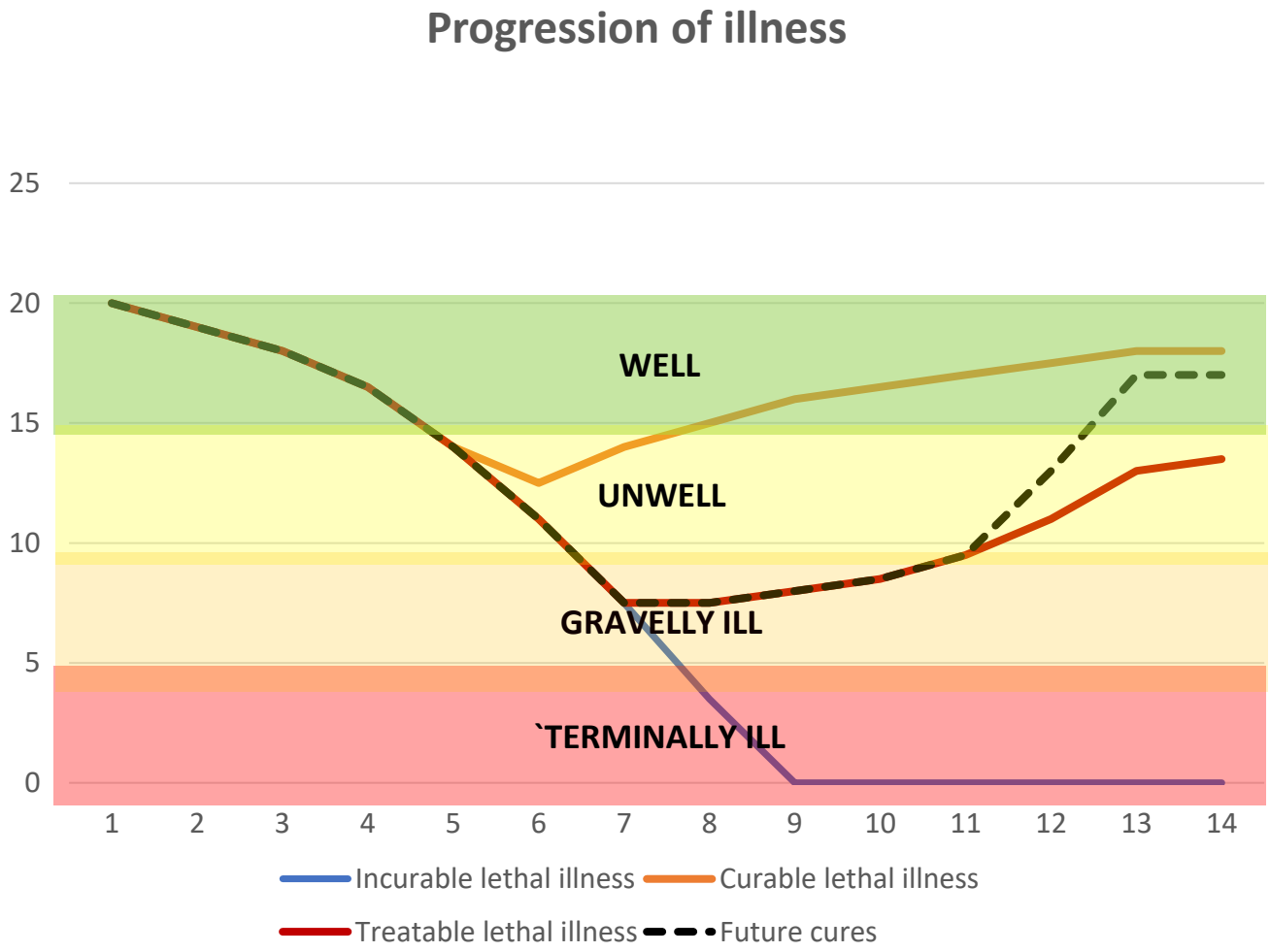
LIFE CYCLE OF MORBIDITY



LIFE CYCLE OF MORBIDITY



LIFE CYCLE OF MORBIDITY



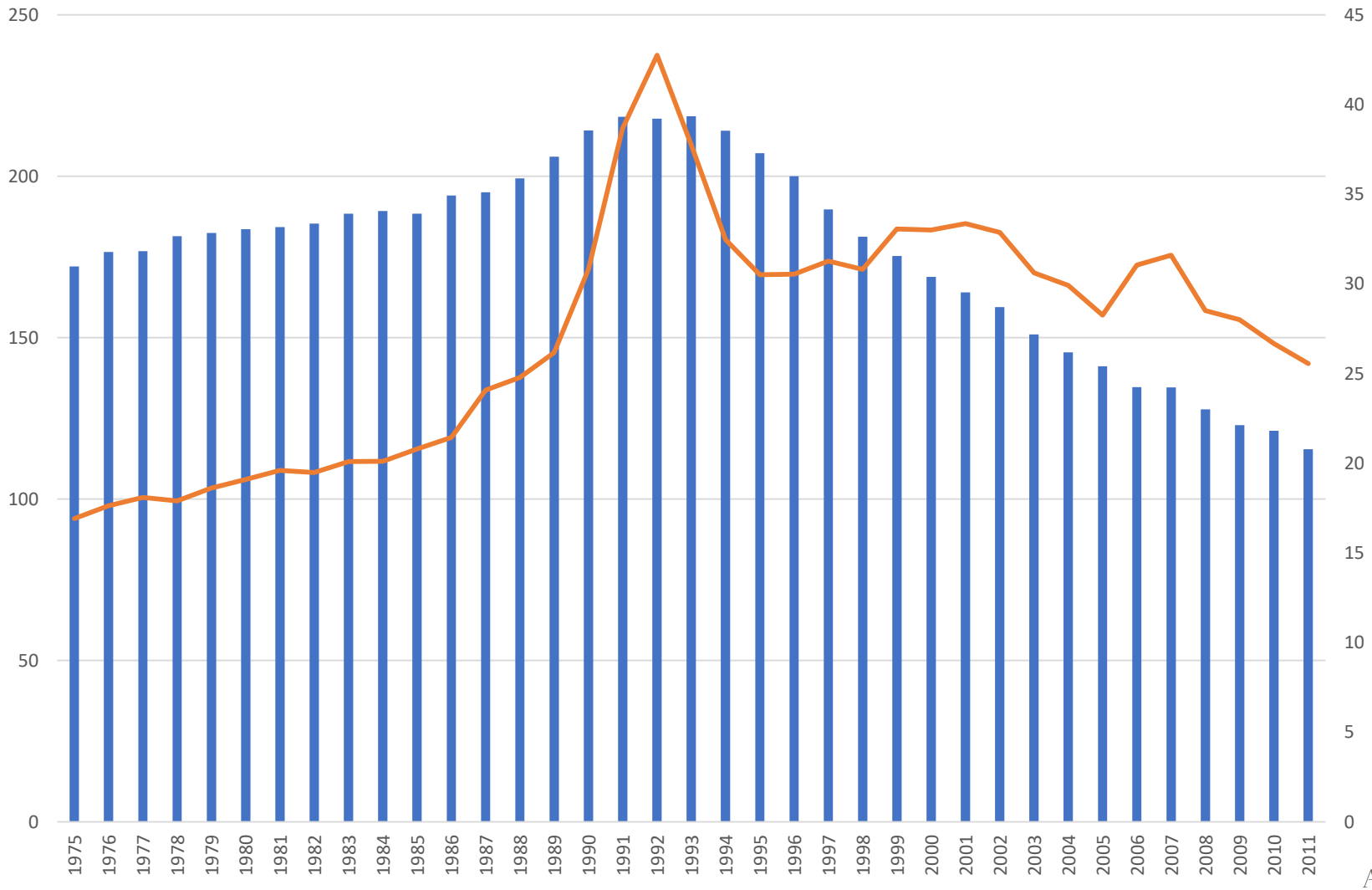
Hosted by ACTUARIAL SOCIETY OF SOUTH AFRICA

SECTION COLLOQUIUM 2019

EXAMPLES OF LETHAL CONDITIONS TURNED CHRONIC:

PROSTATE CANCER AND BREAST CANCER

PROSTATE CANCER

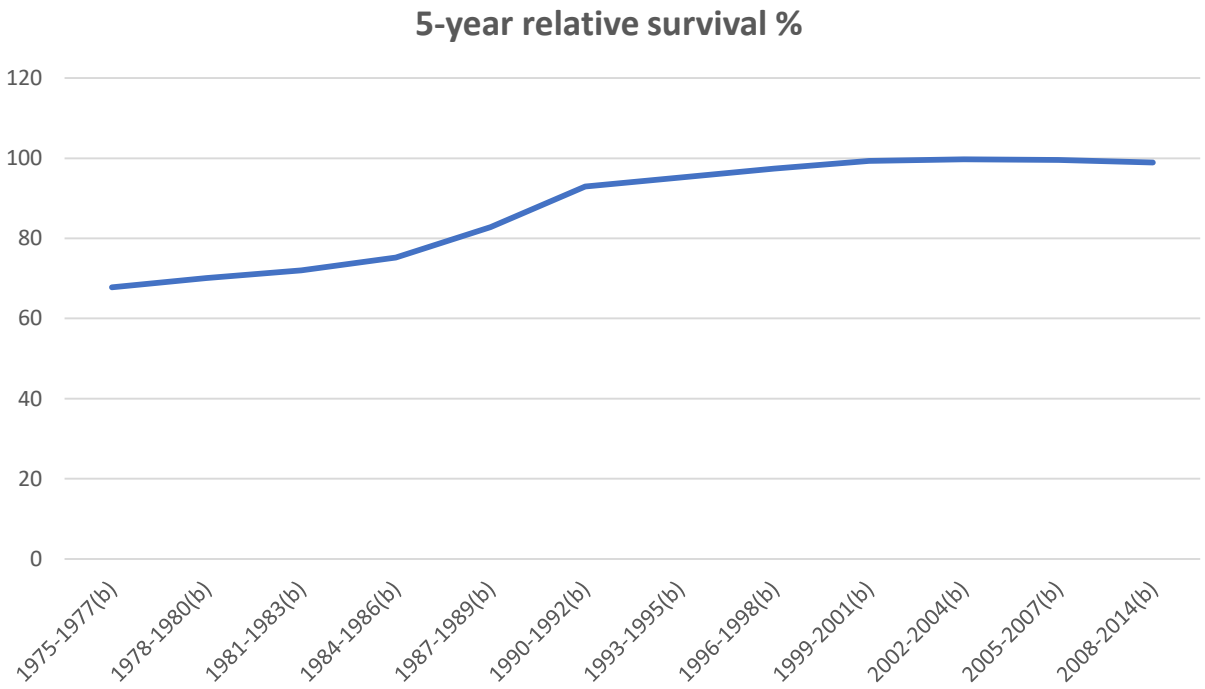


Source: SEER

Hosted by ACTUARIAL SOCIETY OF SOUTH AFRICA

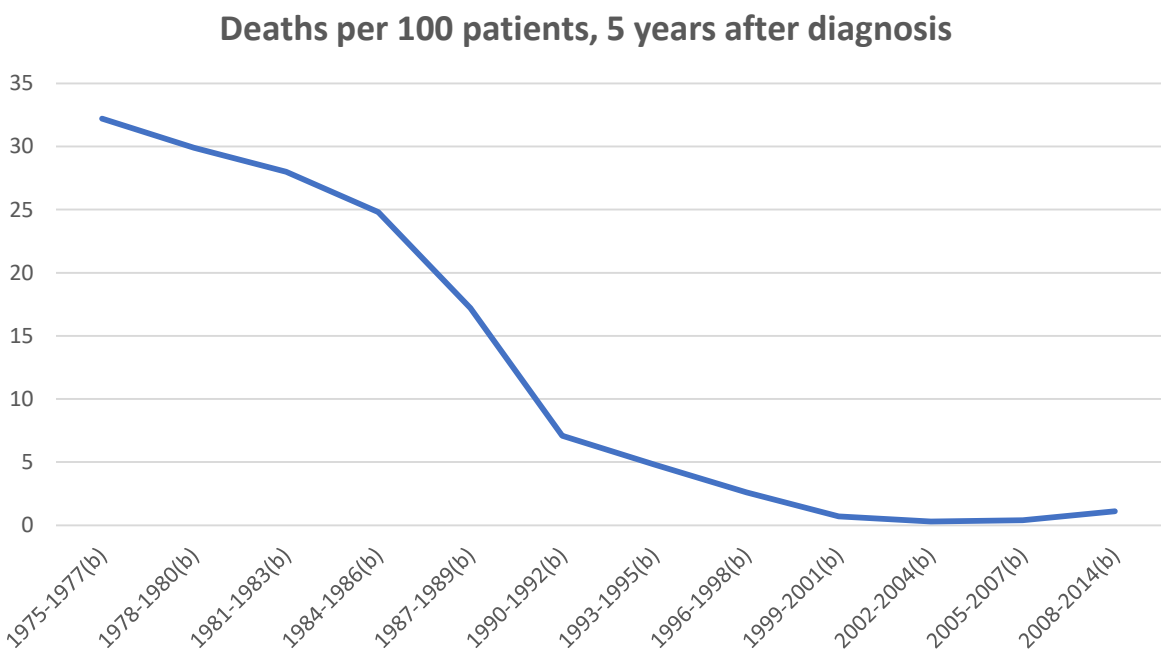
SECTION COLLOQUIUM 2019

PROSTATE CANCER



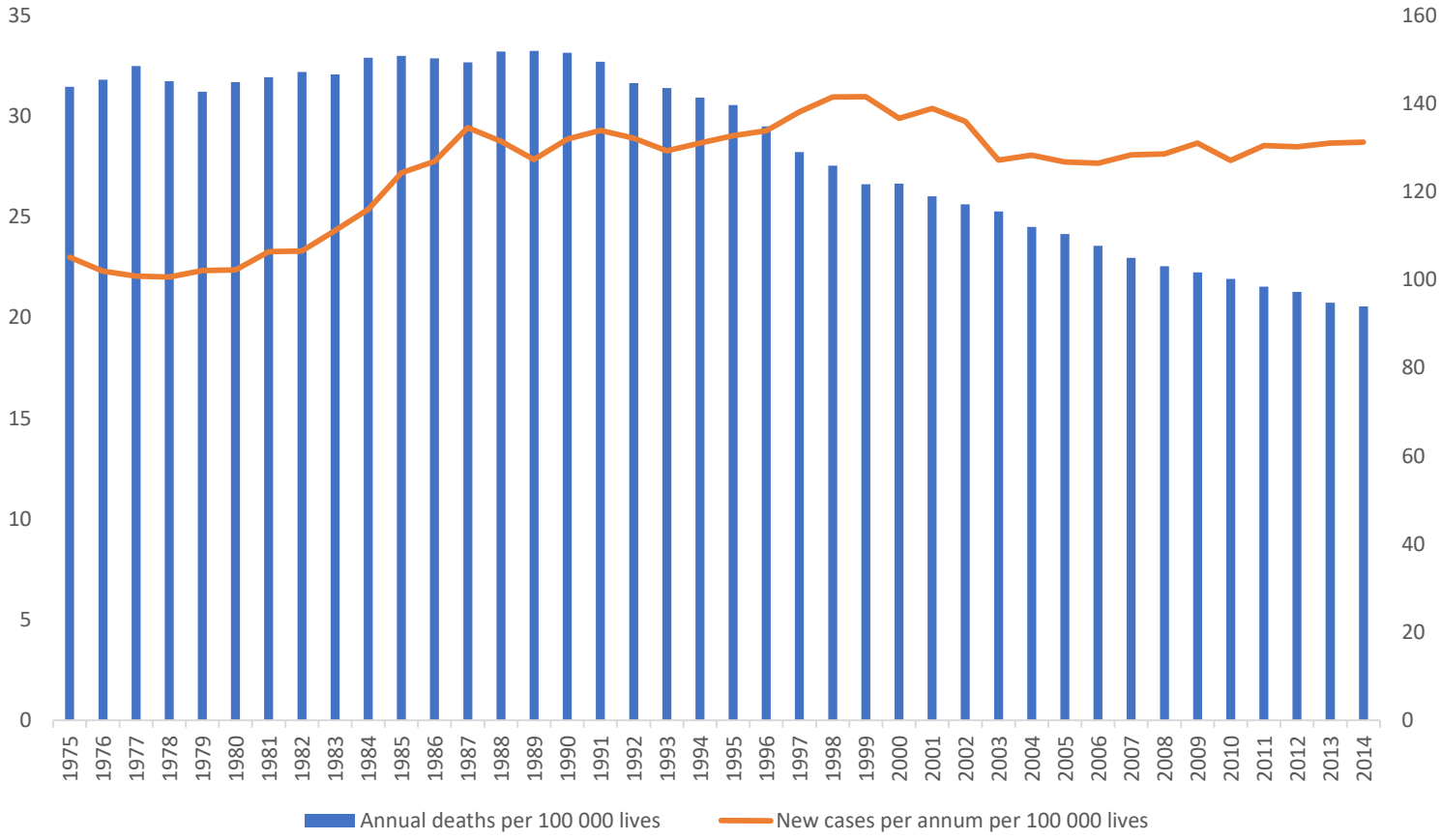
Source: SEER

PROSTATE CANCER



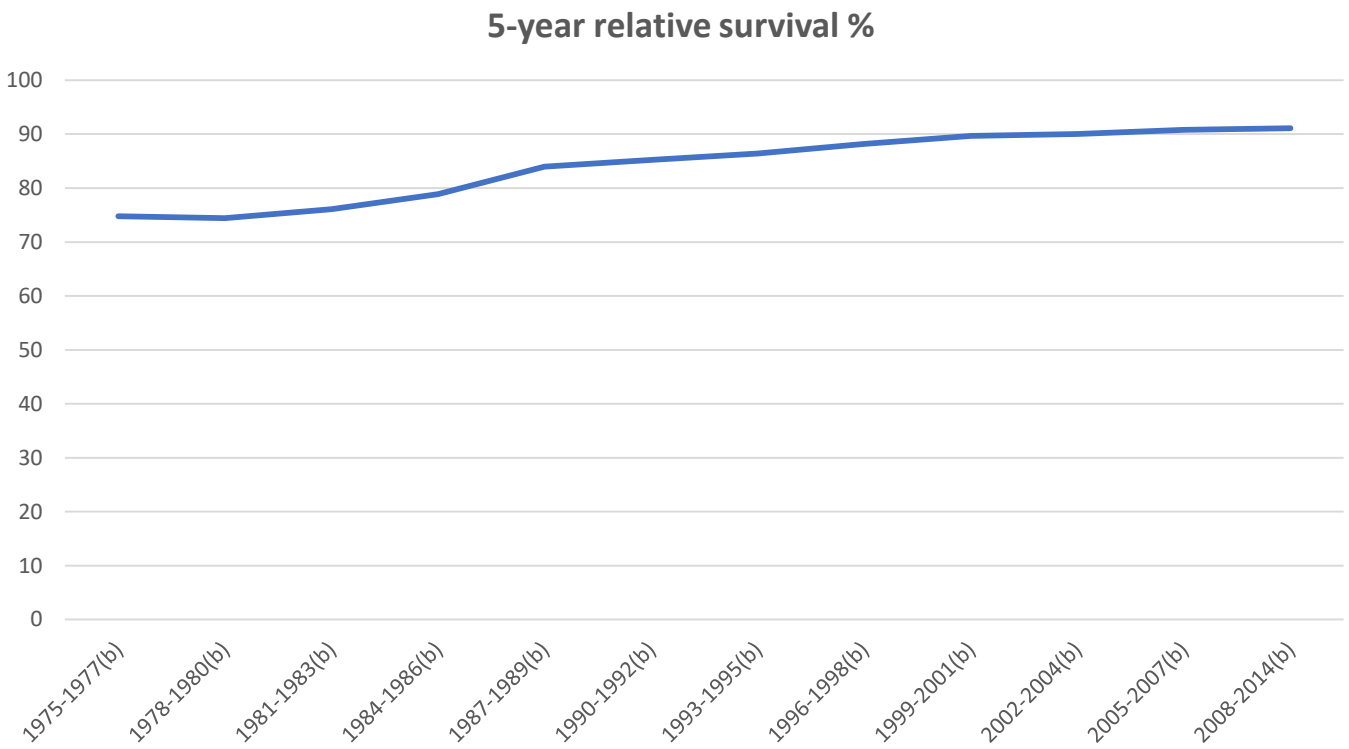
Source: SEER

BREAST CANCER



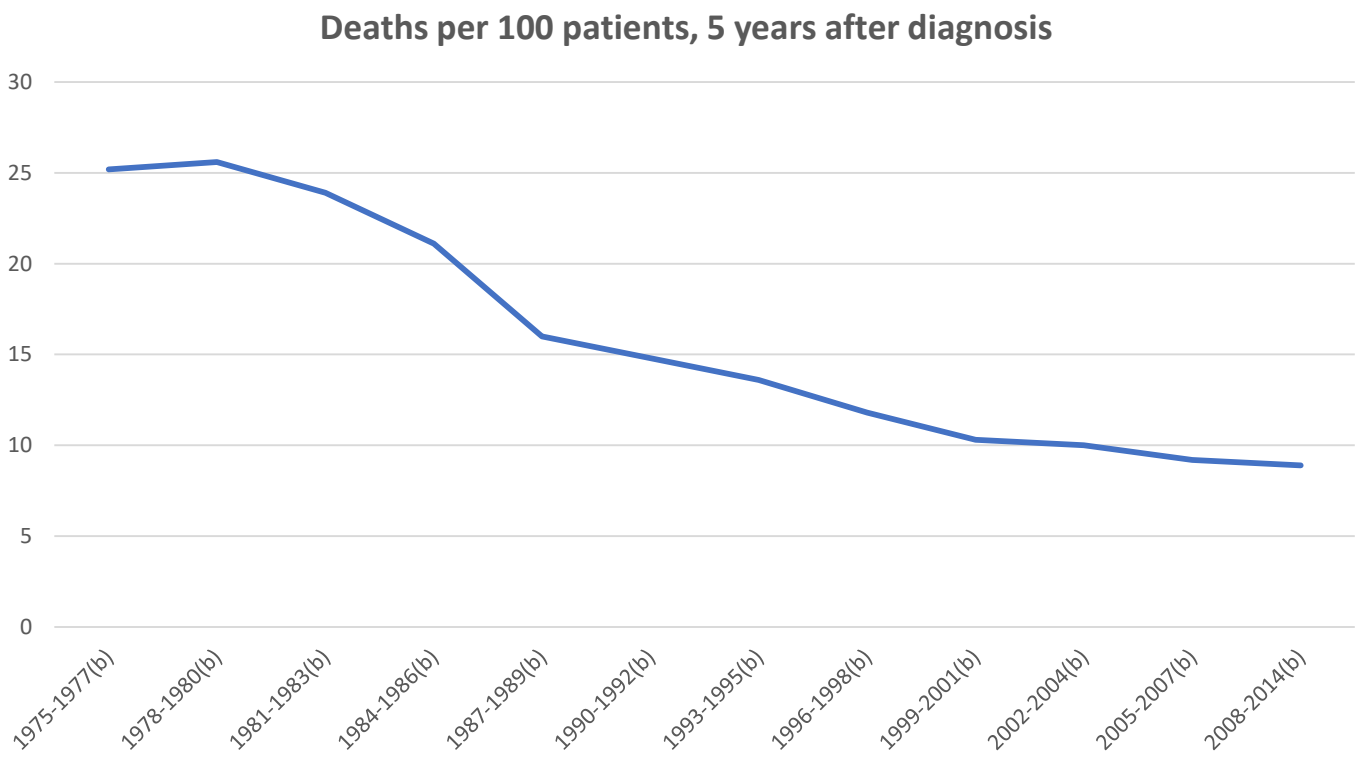
Source: SEER

BREAST CANCER



Source: SEER

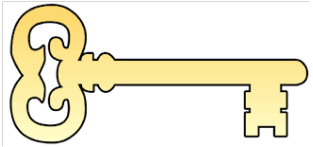
BREAST CANCER



Source: SEER

IMPLICATIONS & APPLICATIONS

IMPLICATIONS: Financial Toxicity



- Prohibitive cost of cancer treatment due to
  - Substantial increase in treatment cost per case AND
  - Increase in proportion of population with cancer

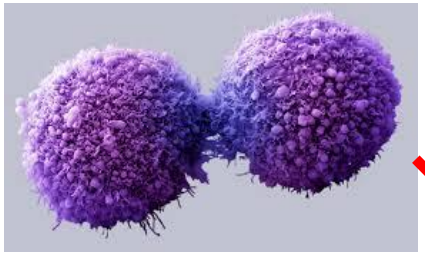
- Biologics can easily cost over $400 000 per course

- Even 3rd party payers (Insurers, Governments) are now passing on an increasing share of burden back to patients

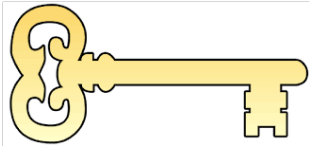
- Result is **financial toxicity**

CANCER TREATMENT FINANCE INSTRUMENT

What is the need that we seek to address

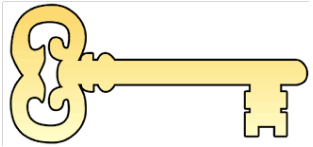


Swap instrument



- Changes nature of treatment payment obligation
- From liability for treatment to liability for <u>successful</u> treatment
- Basic measure of success is survival

Swap instrument



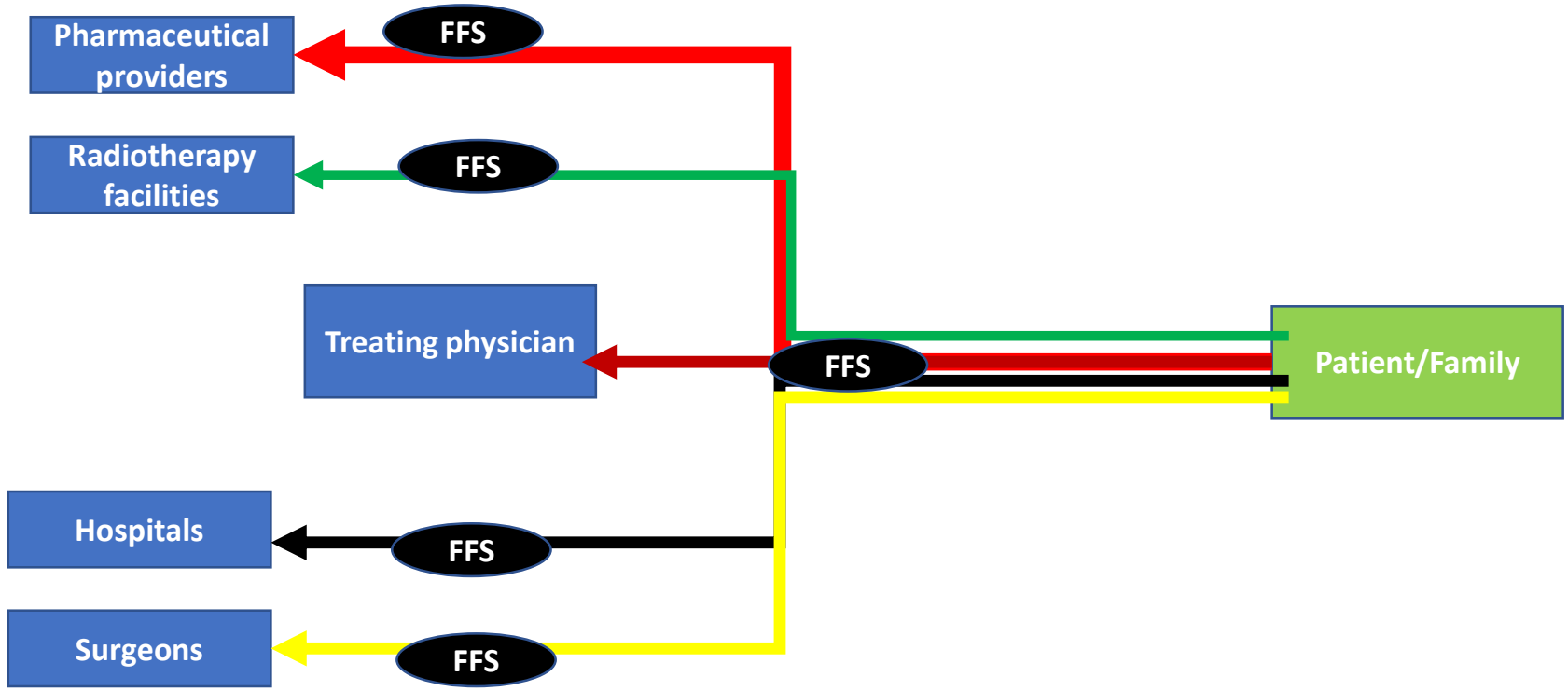
- Other measures can be used as well-
  - Cancer remission
    - and thereafter remaining cancer free
  - Metastasis
  - Relapse

- Referred to as Outcomes-based reimbursement models ('OBM')
  - As opposed to conventional Fee-For Service ('FFS') models

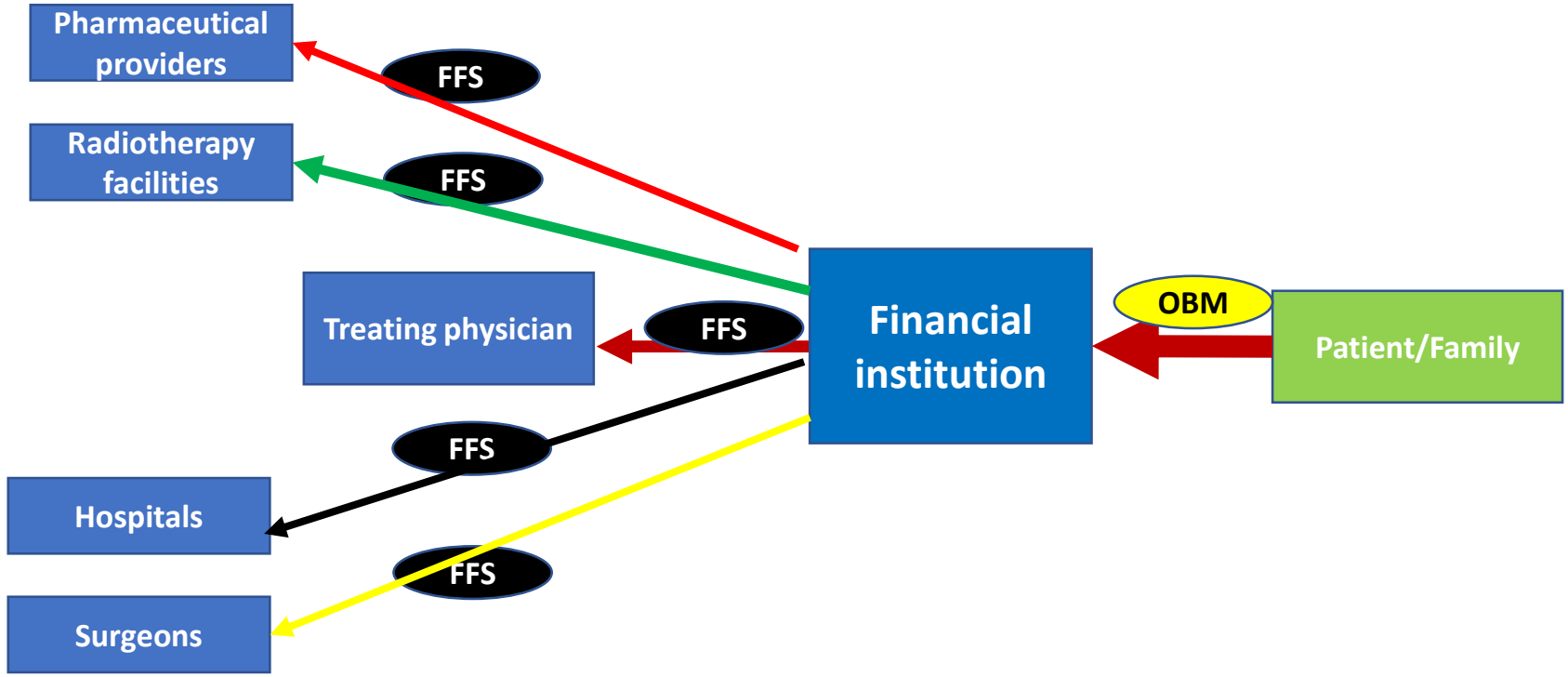
CANCER TREATMENT

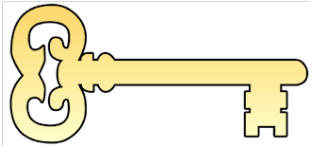
FINANCE SWAP

Conventional monetary flows

- 

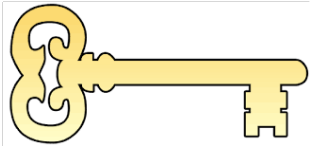
Monetary flows under swap

- 



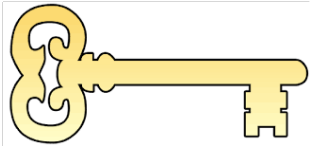
WHY NOW?

Insurable risks



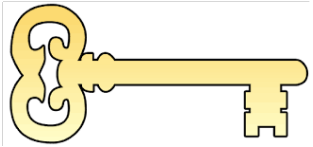
- ✓ Loss event must be well defined, and unambiguous;
- ✓ Events must be independent of each other
- ✓ Arrangement must not be susceptible to moral hazard;
- x Arrangement must not be susceptible to anti-selection
- x Mortality rates must be forecastable with degree of certainty
- x Possible loss must be substantial
- x Low Likelihood of a loss

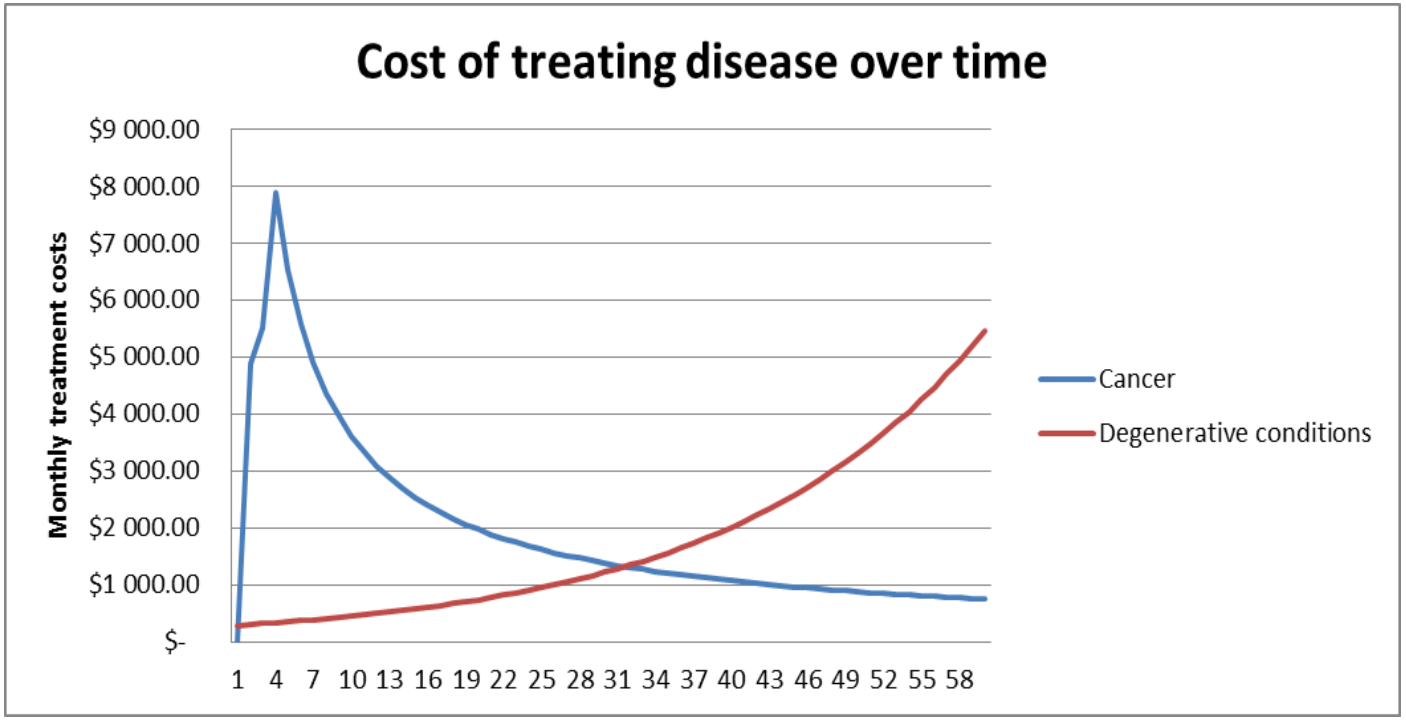
Insurable risks



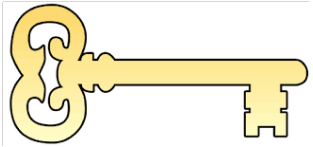
- ~~Arrangement are susceptible to anti-selection:~~
  - Information asymmetry no longer so stark. Objective clinical measures of severity of malignancy
- ~~Mortality not forecastable with degree of certainty~~
  - Rich databases of cancer morbidity and mortality also now available
- ~~Likelihood of a loss NOT low~~
  - Much lower probabilities of loss
- ~~Possible loss NOT substantial~~
  - Losses ARE NOW substantial

Why Cancer?




Cost of treating disease over time
Monthly treatment costs
$9 000.00
$8 000.00
$7 000.00
$6 000.00
$5 000.00
$4 000.00
$3 000.00
$2 000.00
$1 000.00
$-
1 4 7 10 13 16 19 22 25 28 31 34 37 40 43 46 49 52 55 58
Cancer
Degenerative conditions

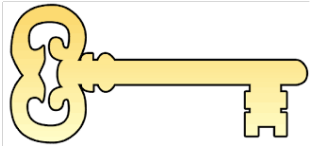
In conclusion



- **For patient/family**-mitigates financial toxicity, even averting bankruptcy
- **For patient/family**-Easier to secure treatment financing and on favourable terms. Improves clinical outcomes
- **For treating physician**-strengthens guarantee of payment for services.
- **For treating physician**- Reduces constraints on selection of optimal treatment options

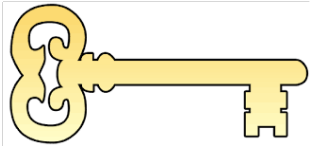
PARENTAL SUPPORT COVER

Longevity implications



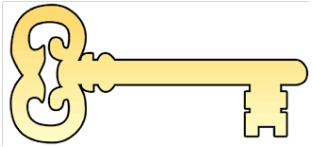
- Longevity primarily responsible for pensions crisis
- Compounded by shift from DB to DC
- Responsibility for pensioner support falling back to adult children (often middle aged themselves)
- Cost of support exacerbated by soaring medical costs

Parental support cover



- This gives rise to an insurable interest for middle aged people with elderly parents
- If they support these parents there is a risk that they pre-decease them
- This risk can be mitigated by life insurance.
- Insurable risk even if the insured life is impaired- risk of deceasing parent may still be low enough to be insurable

CONCLUSION



#ImpairedLivesMatter