FALLS PREVENTION – THE TROUBLE WITH EVIDENCE

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DECLARATION

I HAVE RECEIVED SPONSORSHIP/HONORARIA FROM:

AMGEN

VIFOR

THE CONTENT OF THIS TALK IS NON-PROMOTIONAL

“BUT WOE TO HIM WHO IS ALONE WHEN HE FALLS AND HAS NOT ANOTHER TO LIFT HIM UP!”

ECCLESIASTES 4,10

WHAT IS THIS TALK ABOUT?

FALLS

- LEADING CAUSE OF MORBIDITY AND MORTALITY IN OLDER PEOPLE
- 30-40% OF OLDER PEOPLE FALL PER YEAR
- GREATER RISK IN CARE HOMES AND HOSPITALS
- COMMON REASON FOR ENTERING LONG TERM CARE
- HIP FRACTURE CARE COSTS 1% OF ENTIRE NHS BUDGET

- TO PREVENT FALLS, WE MUST KNOW WHY PEOPLE FALL

CAUSES OF FALLS

IN A PROSPECTIVE STUDY OF OLDER PEOPLE FALLING IN NEW ZEALAND:

20% WERE ACCIDENTS IN PEOPLE WITHOUT RISK FACTORS

20% WERE LARGELY DUE TO SINGLE "MEDICAL" PROBLEMS

60% OF FALLS WERE **MULTIFACTORIAL,**

WITH GAIT/BALANCE COMMONLY IMPAIRED

CAMPBELL ET AL, AGE AND AGEING (1990)

CAUSES OF FALLS

FALLS ARE USUALLY AN ACUTE PRESENTATION IN A PERSON WITH ONE OR MORE CHRONIC PROBLEMS OR RISK FACTORS

RISK FACTORS:

INTRINSIC (PHYSIOLOGICAL) AND EXTRINSIC

PREDISPOSING AND PRECIPITATING

MODIFIABLE AND NON-MODIFIABLE

PHYSIOLOGICAL RISK

↓ LOWER LIMB STRENGTH

↑ REACTION TIME

↑ POSTURAL SWAY

↓ PROPRIOCEPTION

↓ VISUAL CONTRAST SENSITIVITY

LORD ET AL, PHYSICAL THERAPY (2003)

PHYSIOLOGICAL RISK

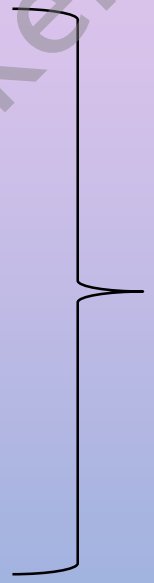
↓ LOWER LIMB STRENGTH

↑ REACTION TIME

↑ POSTURAL SWAY

↓ PROPRIOCEPTION

↓ VISUAL CONTRAST SENSITIVITY



Frailty?

LORD ET AL, PHYSICAL THERAPY (2003)

FRAILTY PHENOTYPE

MUSCLE WEAKNESS (REDUCED GRIP STRENGTH)

SELF-REPORTED EXHAUSTION

LOW PHYSICAL ACTIVITY

SLOW WALKING SPEED

UNINTENTIONAL WEIGHT LOSS

FRIED ET AL, J GERONTOL A BIOL SCI MED SCI (2001)

RISK FACTORS

INCREASING AGE

PREVIOUS FALL (50% RISK OVER NEXT 12 MONTHS)

ENVIRONMENTAL HAZARDS

MUSCULOSKELETAL PROBLEMS

ABNORMALITIES OF GAIT OR BALANCE

NEUROLOGICAL DISEASE

- STROKE, DEMENTIA, PARKINSON'S

SENSORY IMPAIRMENT

MEDICATION

DEPRESSION

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NEUROLOGICAL DISEASE

STROKE, **DEMENTIA**, PARKINSON'S

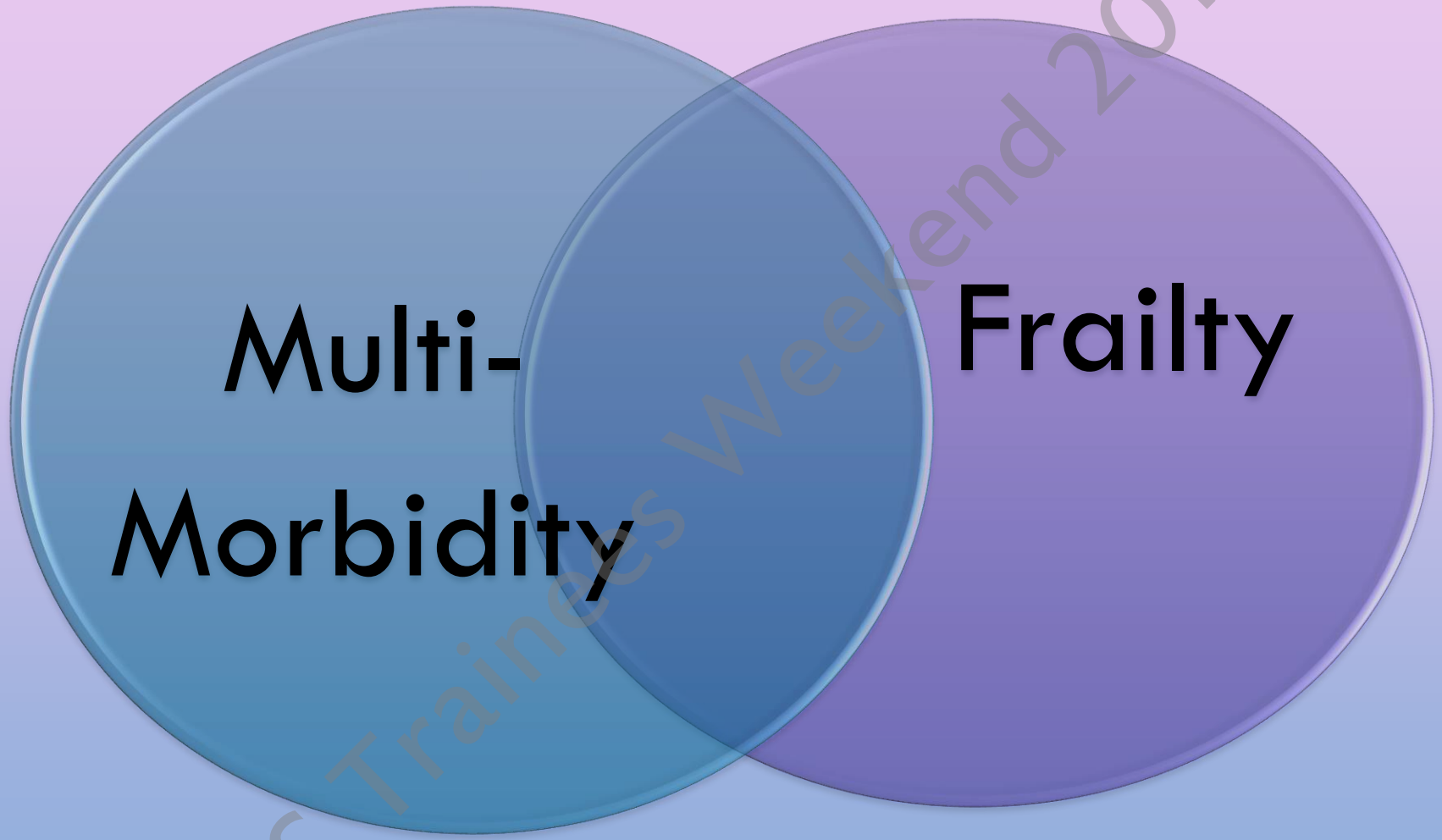
SENSORY IMPAIRMENT

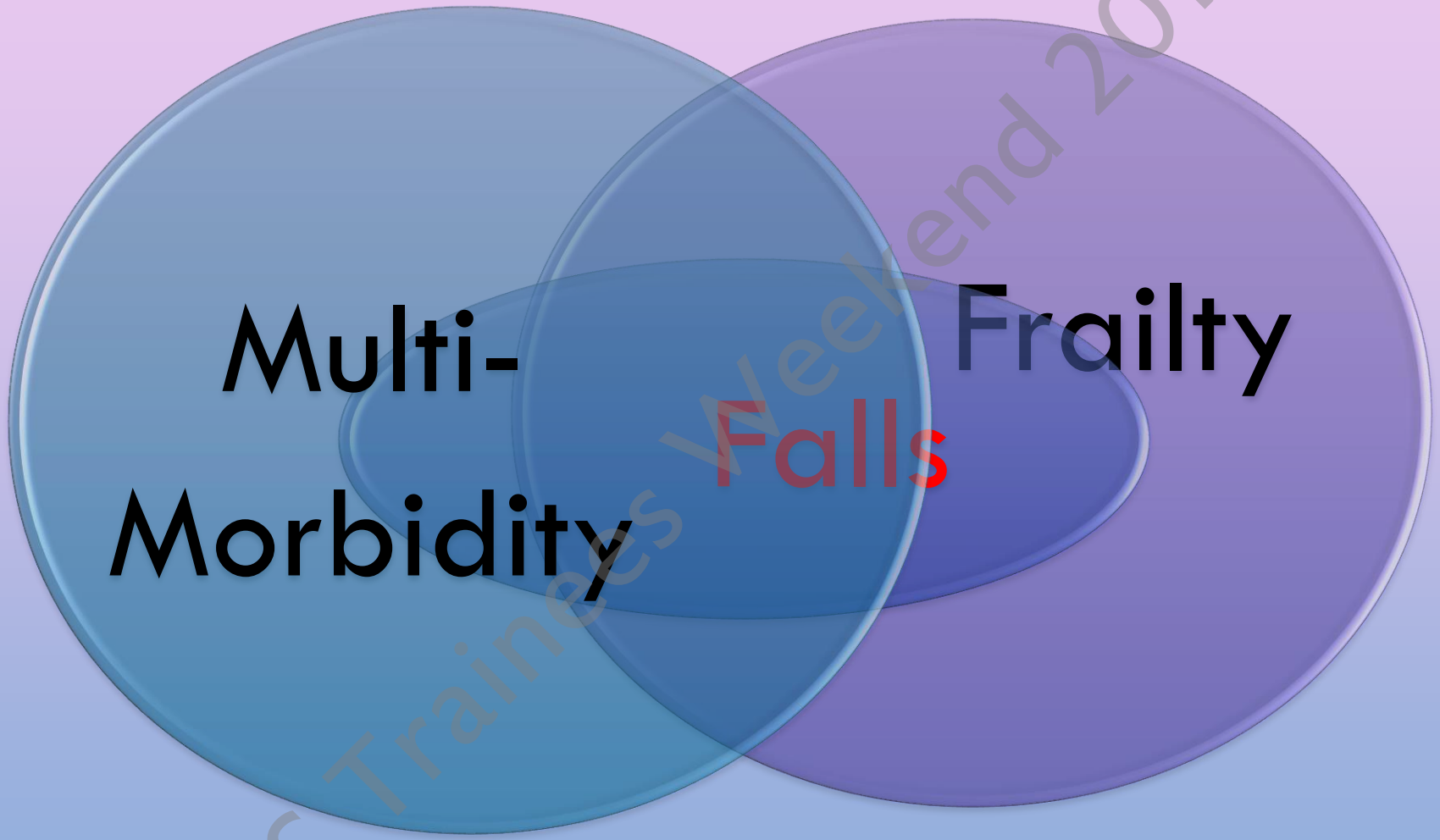
MEDICATION

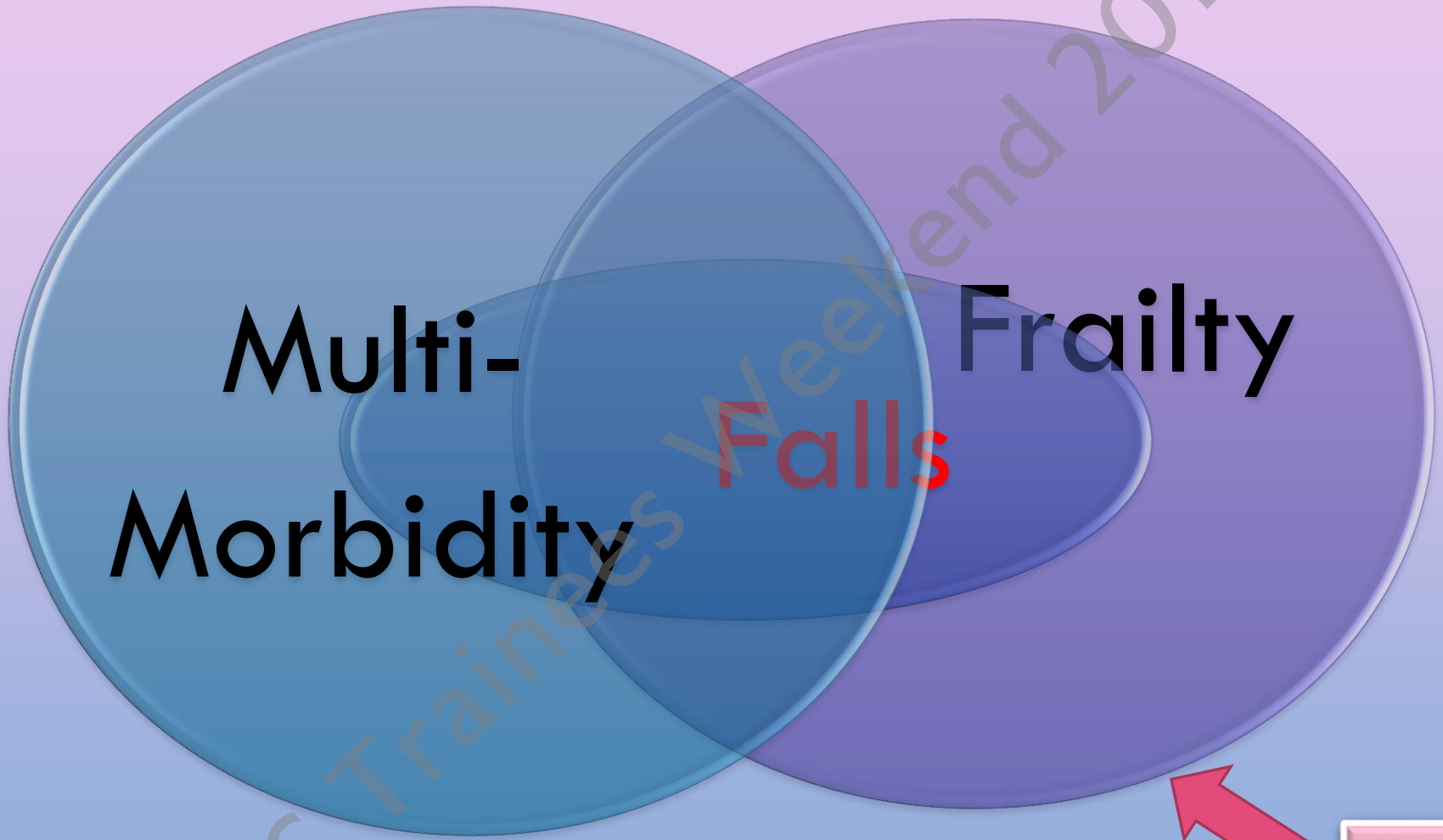
DEPRESSION

Multi-morbidity
(Frailty?)

AN INCREASING NUMBER OF RISK FACTORS OR PHYSIOLOGICAL DEFICITS INCREASES THE RISK OF FALLS AND FRACTURES AS WELL AS THE LIKELIHOOD THAT THE PERSON IS FRAIL







TARGETS FOR FALL PREVENTION

- PHYSIOLOGICAL FRAILTY
- MULTIPLE RISK FACTORS
- STRENGTH AND BALANCE

- COGNITION
- ENVIRONMENT

THEORETICAL STRATEGIES FOR FALL PREVENTION

- PHYSIOLOGICAL FRAILTY – ***CGA***
- MULTIPLE RISK FACTORS – ***FALLS CLINIC***
- STRENGTH AND BALANCE – ***EXERCISE***

- COGNITION – ***DUAL-TASKING COGNITIVE TRAINING***
- ENVIRONMENT – ***OCCUPATIONAL THERAPY AND WALKING AIDS***

KEY APPROACHES TO FALLS PREVENTION

- FALLS ARE ASSOCIATED WITH A NUMBER OF RISK FACTORS
  - ASSESSING AND MODIFYING RISK FACTOR MAY REDUCE FALLS
- FALLS ARE ASSOCIATED WITH IMPAIRED STRENGTH, GAIT AND BALANCE
  - THERAPEUTIC EXERCISE MAY REDUCE FALLS
- FALLS IN HOSPITAL (AND CARE HOMES) MAY REFLECT OTHER FACTORS AFFECTING SAFETY
  - INTERVENTIONS TO INCREASE SAFETY MAY REDUCE FALLS

FALLS PREVENTION EVIDENCE – IN 8 STUDIES, 3 REVIEWS

- MULTIFACTORIAL FALLS PREVENTION (MFFP)
- THERAPEUTIC EXERCISE
- INPATIENT INTERVENTIONS

- COCHRANE REVIEWS

- WHERE NEXT?

MULTIFACTORIAL FALLS PREVENTION (MFFP)

- TINETTI STUDY
- PROFET STUDY

- MANY MORE

TINETTI STUDY

- A MULTIFACTORIAL INTERVENTION TO REDUCE THE RISK OF FALLING AMONG ELDERLY PEOPLE LIVING IN THE COMMUNITY. *TINETTI ET AL. NEJM (1994)*

- 301 COMMUNITY-DWELLING SUBJECTS, 70+, AT LEAST ONE FALL RISK FACTOR
  - (ORTHOSTATIC HYPOTENSION, IMPAIRED GAIT, SEDATIVES, >3 MEDICATIONS)
- RCT - TAILORED INTERVENTION (EXERCISE, MED REVIEW, EDUCATION)
- FEWER FALLERS IN INTERVENTION GROUP (35%) VS. CONTROLS (47%) P=0.04

PROFET STUDY

- PREVENTION OF FALLS IN THE ELDERLY TRIAL (PROFET). *CLOSE ET AL. LANCET (1999)*

- 397 SUBJECTS, PRESENTING TO ED WITH A FALL
- RCT – DETAILED MEDICAL AND OT ASSESSMENT AND INTERVENTION
- FEWER FALLERS FEWER FALLS IN INTERVENTION GROUP – ODDS RATIO 0.39 (CI 0.23 – 0.66)
- ALSO REDUCTION IN INJURY AND ADMISSION

COCHRANE REVIEW
MULTIFACTORIAL INTERVENTIONS

- REVIEW OF 62 RANDOMISED CONTROLLED TRIALS - PUBLISHED 2018
- 43 MULTIFACTORIAL INTERVENTIONS (ASSESSMENT THEN TAILORED INTERVENTION)
  - **EXERCISE,** ENVIRONMENT/AIDS, MED REVIEW, PSYCHOLOGICAL
  - REDUCED FALLS RATE – RATE RATIO 0.77 (CI 0.67 - 0.87)
  - POSSIBLE REDUCTION IN FRACTURES – RELATIVE RISK 0.73 (CI 0.53 - 1.01)
- 17 MULTIPLE COMPONENT INTERVENTIONS (ALL PARTICIPANTS GET ALL INTERVENTIONS)
  - **EXERCISE** PLUS EDUCATION OR HOME ASSESSMENT
  - REDUCED FALLS RATE- RATE RATIO 0.74 (CI 0.60 - 0.91)
- GENERALLY LOW-QUALITY EVIDENCE, THEREFORE WEAK RECOMMENDATIONS

WHAT IS MFFP REALLY?

- INTERVENTIONS AIMED AT MULTI-MORBIDITY
- OR SPECIFIC FALLS RISK FACTORS?
- OR IS IT ACTUALLY CGA?

- TINETTI – POSSIBLY CGA
- PROFET –PROBABLY CGA
- PRE-FIT – NOT CGA

THERAPEUTIC EXERCISE INTERVENTIONS

- OTAGO
- FAME
- PROACT-65

OTAGO PROGRAMME

- RANDOMISED CONTROLLED TRIAL OF A GENERAL PRACTICE PROGRAMME OF HOME BASED EXERCISE TO PREVENT FALLS IN ELDERLY WOMEN. *CAMPBELL ET AL. BMJ (1997)*
- 233 COMMUNITY-DWELLING WOMEN AGED 80+
- RCT – INDIVIDUALISED HOME-BASED 6-MONTH PHYSICAL THERAPY PROGRAMME
- 35% LOWER FALLS RATE IN INTERVENTION GROUP
- JUST SIGNIFICANT REDUCTION IN FALL WITH INJURY

FAME (FALLS MANAGEMENT EXERCISE)

- TAILORED GROUP EXERCISE REDUCES FALLS IN COMMUNITY-DWELLING OLDER FREQUENT FALLERS (AN RCT). *SKELTON ET AL. AGE AND AGEING (2005)*
- 81 COMMUNITY-DWELLING WOMEN, AGED 65+, HISTORY OF 3+ FALLS IN PREVIOUS YEAR
- RCT – WEEKLY EXERCISE CLASS FOR 36 WEEKS, PLUS HOME-BASED EXERCISE
- 31% FEWER FALLS IN INTERVENTION GROUP ($P = 0.028$)
- TREND TOWARDS REDUCTION IN FRACTURES

#AFRAIDTOASK - QUESTION FROM THE INTERWEB

- CHRIS OSUAFOR

"IS A FALL A SIDE EFFECT OF REHAB? MR X WAS INVITED FOR PHYSIO SESSIONS AND WAS TOLD HE COULD HAVE ONE OF HIS UNANNOUNCED POSTURAL DROPS, BUT SOMEONE WOULD BE THERE TO GENTLY LAY HIM ON THE GROUND. SHOULD MR X WAIT FOR HIS POSTURAL DROP TO BE CURED?"

BUT WHICH IS BETTER? (PROACT-65)

- REDUCING FALLS AMONG OLDER PEOPLE IN GENERAL PRACTICE: THE PROACT65+ EXERCISE INTERVENTION TRIAL. *GAWLER ET AL, ARCH GERONTOLOGY GERIATRICS (2016)*
- CLUSTER RCT – OTAGO V FAME V USUAL CARE (24 WEEK PROGRAMME)
- 1256 PARTICIPANTS AGE 65+, EXCLUDING THOSE WITH 3+ FALLS IN PREVIOUS YEAR
- PRIMARY OUTCOME WAS INCREASE IN PHYSICAL ACTIVITY
- FALLS WERE A PRE-PLANNED SECONDARY OUTCOME
- 26% REDUCTION IN FALLS AND 45% REDUCTION IN INJURIOUS FALLS WITH FAME V USUAL CARE
- PERSISTENT REDUCTION IN FALLS IN THOSE THAT MAINTAINED INCREASED ACTIVITY
- NON-SIGNIFICANT REDUCTION IN FALLS WITH OTAGO

COCHRANE REVIEW
THERAPEUTIC EXERCISE

- ABOUT TO BE PUBLISHED…

- BUT EXPECTED TO BE POSITIVE

WHAT ABOUT EXERCISE V MFFP?

- A CLUSTER RANDOMISED CONTROLLED TRIAL OF ADVICE, EXERCISE OR MULTIFACTORIAL ASSESSMENT TO PREVENT FALLS AND FRACTURES IN COMMUNITY-DWELLING OLDER ADULTS: PROTOCOL FOR THE PREVENTION OF FALLS INJURY TRIAL (PREFIT). *LAMB ET AL (2019 TBC)*
- 9000+ COMMUNITY-DWELLING AGED 70+
- ADVICE ONLY V FAME V MFFP
- RESULTS NOT YET IN PUBLIC DOMAIN SO I CAN'T PUT IT ON A SLIDE…

INPATIENT INTERVENTIONS

- INTERVENTIONS AIMED AT RISK FACTORS AND SAFETY/RISK
- FALLSAFE
- 6-PACK

- THERAPEUTIC EXERCISE MAY BE EFFECTIVE IN SUB-ACUTE/INTERMEDIATE CARE WARDS

FALLSAFE

- FALLS PREVENTION IN HOSPITALS AND MENTAL HEALTH UNITS: AN EXTENDED EVALUATION OF THE FALLSAFE QUALITY IMPROVEMENT PROJECT. *HEALY ET AL. AGE AND AGEING (2014)*
- QUALITY IMPROVEMENT PROJECT (BUT WITH CONTROL WARDS!)
- INTRODUCTION OF A WARD-LEVEL CARE BUNDLE
- FALLS RATES PRE- AND POST-INTERVENTION
- 25% REDUCTION IN FALL RATES ($P<0.001$)
- UNABLE TO DEMONSTRATE SUSTAINABILITY OR SPREAD TO OTHER WARDS

6-PACK

- 6-PACK PROGRAMME TO DECREASE FALL INJURIES IN ACUTE HOSPITALS: CLUSTER RANDOMISED CONTROLLED TRIAL. *BARKER ET AL. BMJ (2016)*
- CLUSTER RCT IN 6 AUSTRALIAN HOSPITALS, RANDOMISED AT WARD LEVEL, 46245 ADMISSIONS
- 6-ITEM INTERVENTION V USUAL CARE:
- SUPERVISION IN THE BATHROOM
- TOILETING REGIMEN
- "FALLS ALERT" SIGN
- WALKING AIDS WITHIN REACH
- ULTRA-LOW BED
- BED/CHAIR ALARM
- NO REDUCTION IN FALLS OR INJURIES – INCIDENT RATE RATIO 1.04 (CI 0.78 TO 1.37)

COCHRANE REVIEW
FALLS IN HOSPITALS AND CARE SETTINGS

- REVIEW OF 95 RANDOMISED CONTROLLED TRIALS (138,164 PARTICIPANTS) - PUBLISHED 2018
- 71 RCT'S OF INTERVENTIONS IN CARE FACILITIES (40,374 PARTICIPANTS)
  - MULTIFACTORIAL INTERVENTION - NO SIGNIFICANT EFFECT
  - EXERCISE – NO SIGNIFICANT EFFECT
  - MEDICATION REVIEW – NO SIGNIFICANT EFFECT
  - VITAMIN D SUPPLEMENTATION – REDUCED FALLS RATE RATIO 0.72 (CI 0.55 – 0.95)
- 24 RCT'S OF INTERVENTIONS IN HOSPITALS (97,790 PARTICIPANTS)
  - MULTIFACTORIAL INTERVENTION – POSSIBLE EFFECT IN SUB-ACUTE WARDS – FALLS RATE RATIO 0.80 (CI 0.64 – 1.01)
  - ENHANCED PHYSIO/EXERCISE – NO SIGNIFICANT EFFECT
  - SENSOR ALARMS – NO SIGNIFICANT EFFECT
- GENERALLY LOW-QUALITY EVIDENCE

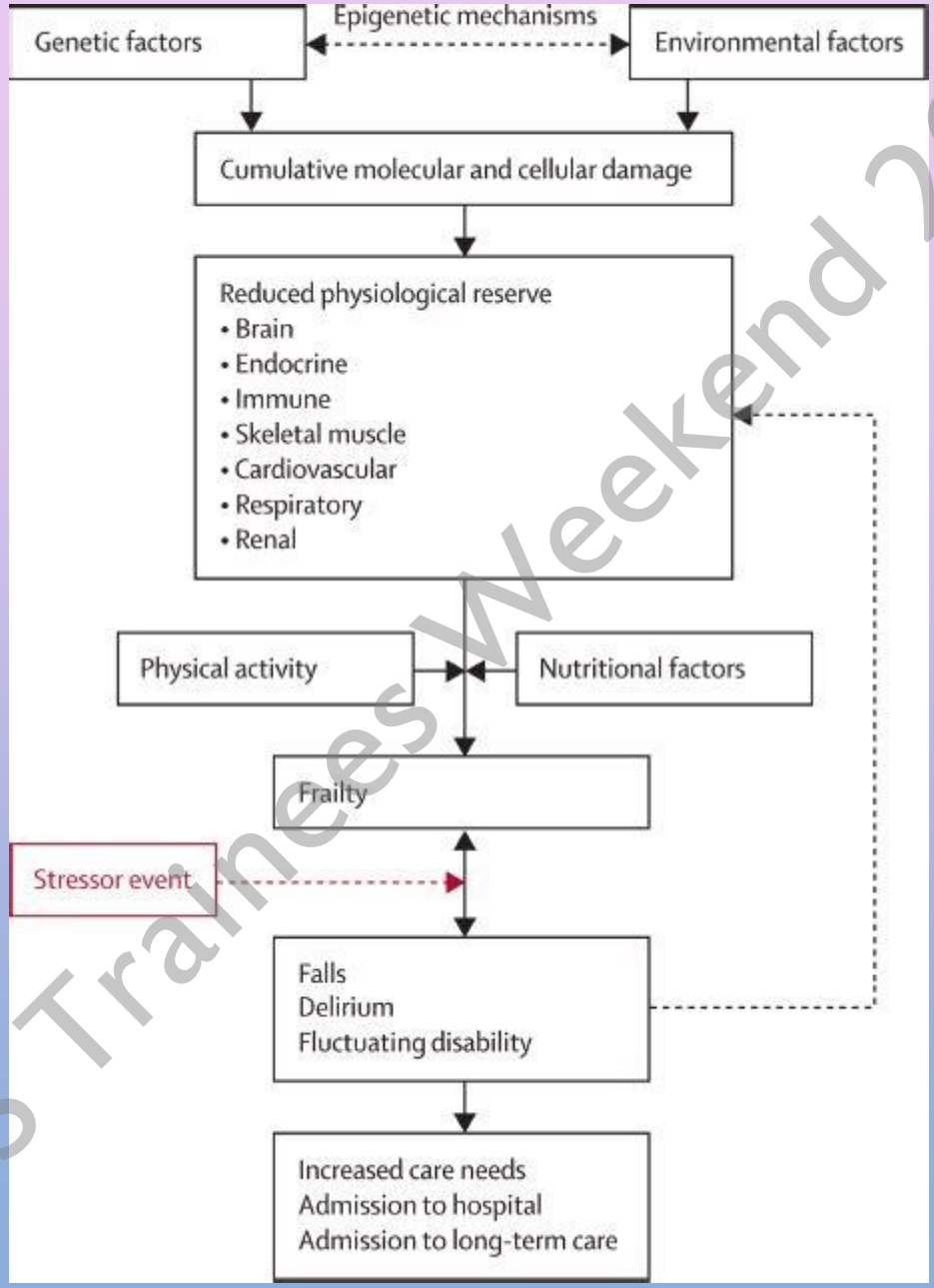
WHAT NEXT?

WHAT NEXT?

- PHYSIOLOGICAL FRAILTY
- MULTIPLE RISK FACTORS
- STRENGTH AND BALANCE

- COGNITION
- ENVIRONMENT

Clegg A, Rockwood K et al.
Frailty in Elderly People.
Lancet (2013)



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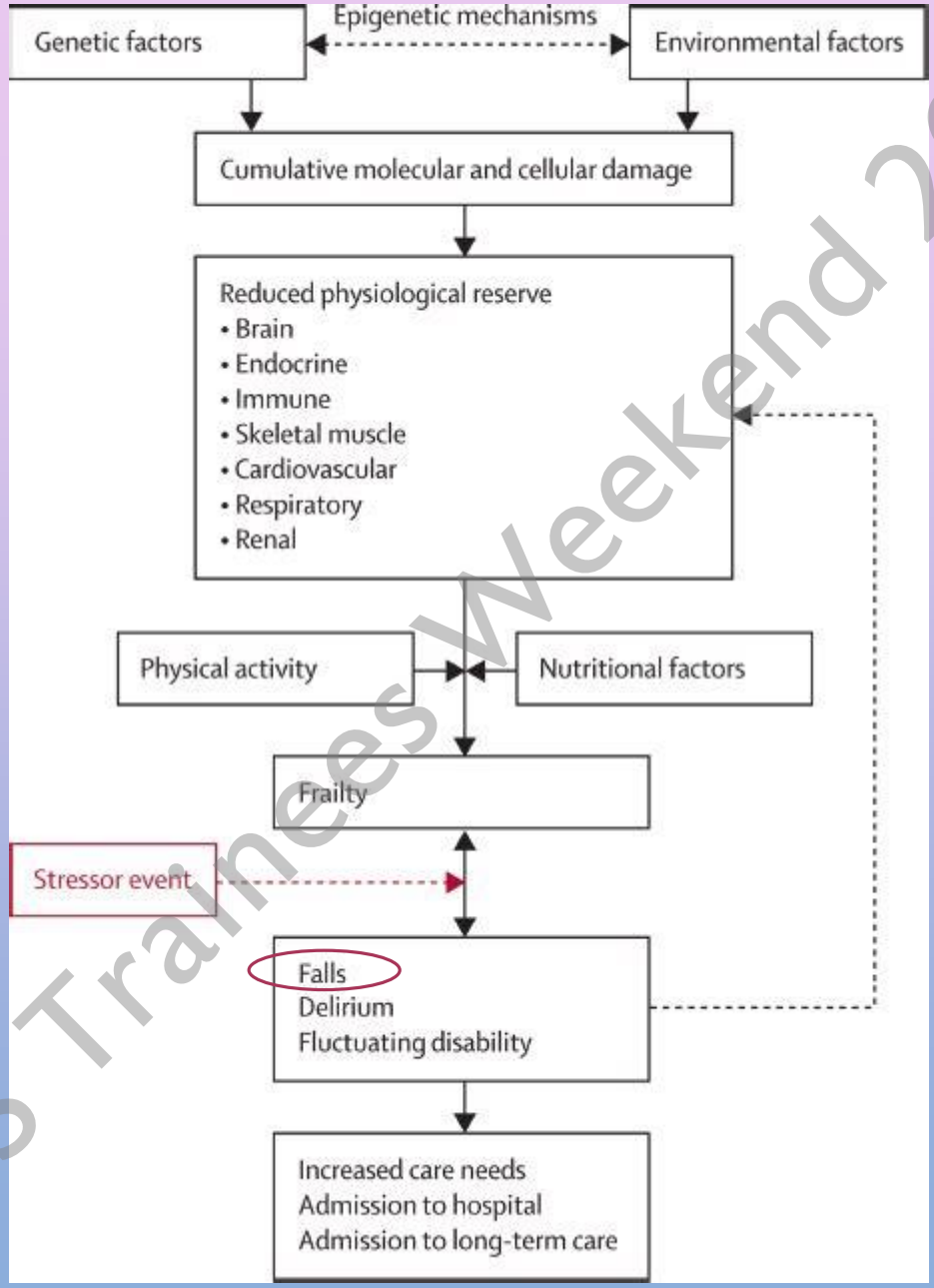

A new model of frailty care

Proportion alive

Time

5 yrs

Fit

Mild frailty

Moderate frailty

Severe frailty

WHAT NEXT?

- MORE STUDIES (OBVIOUSLY!)
- PRE-PLANNED TARGETED/STRATIFIED BY RISK/FRAILTY/MULTI-MORBIDITY
- CGA FOR FALLS PREVENTION?
- NUTRITION + EXERCISE
- ONGOING STUDIES OF FALLS PREVENTION IN PEOPLE LIVING WITH DEMENTIA
- HOSPITAL – NEED EVALUATION OF GET UP, GET DRESSED, GET MOVING

THANK YOU