UNIVERSITY OF EXETER

COLLEGE OF MEDICINE AND HEALTH

Falls in people with dementia

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The problem of falls in people with dementia

- Falls are common in dementia
- Poor recovery, increased risk of delirium
- Increased institutionalisation
- Higher mortality
- Specific consideration of dementia in both risk factor and intervention studies has been much less frequent
- Previous trials in dementia have not been very effective

Annual prevalence of falls

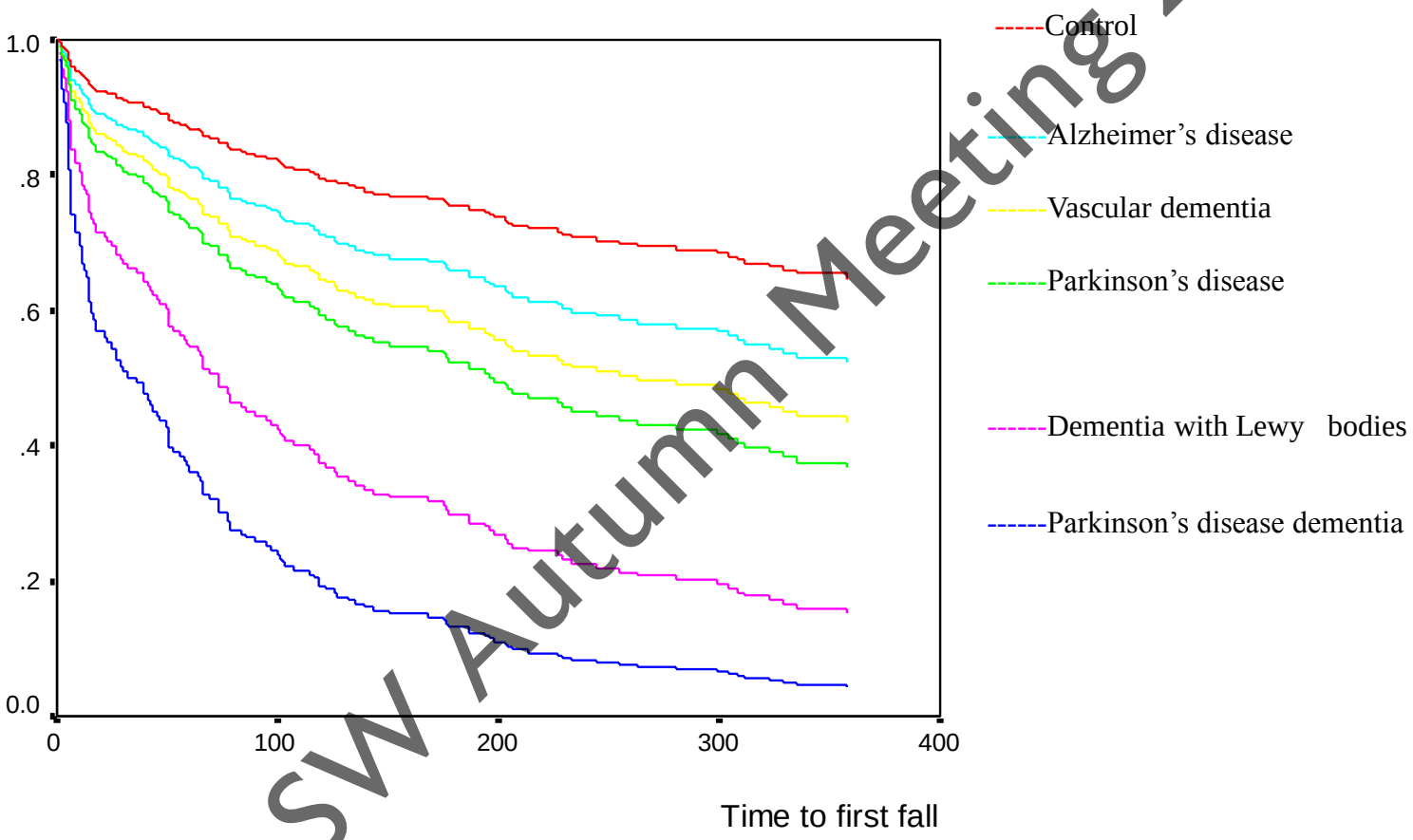
- Salva et al 2012
  - Outpatient/ day care cohort in a trial
  - 35.6%
- Allan et al 2009
  - Secondary care cohort
  - 47-90% depending on type of dementia
- Pellfolk et al 2009
  - 160 people in group dwellings for people with dementia
  - 40% fell in 6 months
- Eriksson et al 2008
  - Residential care
  - 62%

Annual prevalence of falls in different dementia subtypes

- Allan et al 2009

Controls	AD	VAD	DLB	PDD	PD
36%	47%	47%	77%	90%	61%

Time to first fall by diagnosis



Annual incidence of falls/ 1000 persons

Control	AD	VAD	DLB	PDD	PD
1023	2486	3135	9087	19 000	4617

Common cause of hospitalisation in dementia

- Voisin et al 2009
- 686 patients with AD followed for 2 years
- 26.2% hospitalised per year
- 20.9 % of hospitalisations were because of fall and fractures

Risk factors for falls in dementia

- 25 prospective studies
- Varying quality
- Many small
- Dementia not always clearly specified
- Younger onset dementias
- Some examining single risk factor only
- Few examining comprehensive range of multiple factors or using multivariate analyses

Multiple risk factors in the community

Buchner DM	1987	Secondary care	157	AD	Wandering, toxic reactions to drugs, co-morbid illnesses
Asada T	1996	Community	86	Dementia	Previous falls, dementia severity, need for assistance with basic care
Ballard CG	1999	Secondary care	65	30 DLB, 35 AD	Multiple falls: DLB, Parkinsonism, previous falls, impaired ADLs, age
Lowery K	2000	Secondary care	65	30 DLB, 35 AD	Parkinsonism, No association with environmental hazards
Sato Y	2004	Secondary care	225	Female AD	Increased falls and fractures with vit D deficiency and high PTH
Horikawa E	2005	Outpatient	124	AD	Age, neuroleptic drug use, increased postural sway, periventricular white matter lesions
Allan LM	2009	Secondary care	179	38 AD, 32 VAD, 30 DLB, 40 PDD, 39 Controls	Lewy body disorder, Previous falls, Orthostatic hypotension, Depression, Physical activity protective
Kikuchi R	2009	Outpatient	79	Cognitive impairment	Using a stick
Ryan JJ	2011	Community	43	AD	Gait aid
Farrell MK	2011		34	Dementia	Previous fall
Salva A	2012	Outpatient/ Day care	626	Dementia	Age, Activities of daily living, Previous falls

Multiple risk factors in care homes

Van Dijk PT	1993	Nursing home	240	Dementia	Recent admission, ward transfer, dementia severity, physical impairment, ,male
Nakamura T	1996	Nursing home	97	AD	Dementia severity, stride length variability
Eriksson S	2008	Residential care	103	103 dementia, 83 without dementia	Walking aid
Pellfolk T	2009	Group dwelling for people with dementia	160	Dementia	Help with hygiene, Challenging behaviour, Able to rise from chair, Walking aid, Participating in outdoor walks

Single risk factor studies

Katz IR	2004	Residential care	537	Dementia (patients participating in risperisone trial)	Decreased falls at 1mg risperidone /day, increased falls at 2 mg/day in ambulatory individuals with low levels of wandering
Olsson RH	2005	Long term care facility	364	Dementia	Poor performance on Reality Comprehension Clock test
Sterke CS	2010	Nursing home	75	Dementia	Tinetti score
Sterke CS	2012	Nursing home	57	Dementia	Gaitrite: reduced velocity and stride length
Sterke CS	2012	Nursing home	248	Dementia	Dose of antipsychotics
Maggio D	2010	Community	110	Dementia	Caregiver burden

Inpatient studies

Camicioli R	2004	Specialised AD care unit	42	42 advanced AD	Morse Fall Scale, UPDRS, gait cadence
Eriksson S	2009	Psychogeriatric ward	204	Dementia	Male, poor copy design, any difficulty walking. Reduced risk with statins
Vasallo M	2009	Rehabilitation ward	825	"Cognitive impairment"	Unsafe gait
Imamura T	2000	Dementia research ward	561	362 AD, 50 VAD, 45 FTD, 28 DLB, 77 other	Fall related injuries higher in DLB compared with AD

Risk factors replicated in more than one study

- Age
- Previous falls
- Severity of dementia
- Walking aids
- Impaired activities of daily living
- Psychotropic drugs
  - Particularly anti-psychotics

Univariate analyses

Non-modifiable

- Lewy body disorder
- History of falls
- History of recurrent falls
- Duration of dementia

Modifiable

- Cardioactive drugs
- Autonomic symptoms
- Time for blood pressure to recover on standing
- Physical activity-protective

Medication

- Cholinesterase inhibitors (but not memantine) increase the risk of syncope
  - Odds ratio 1.53 (1.02-2.30)
  - Kim DH et al 2011
- Antipsychotics increase the risk of hip fracture in nursing home patients
  - Odds ratio 1.26 (1.05-1.52)
  - Jalbert JJ et al 2010

Preventing falls in dementia: the trials

- **Shaw et al 2003**
- Fallers presenting to A&E
- MMSE <24
- Multifactorial intervention
- No reduction in falls or number of fallers

but

- Mean MMSE was only 14
- 70% lived in care homes

Interventions to prevent falls in dementia in care homes

- Jensen et al. 2003
  - Intervention in a care home with analysis of efficacy in those with cognitive impairment
  - lack of effect in those with MMSE<19
- Oliver et al. 2006
  - Review of intervention trials in care homes: possible association of higher prevalence of dementia with smaller effect size

More recent trials in care homes

- Bouwen A et al 2008
  - Staff oriented intervention RCT in nursing homes
  - Reduced risk of falling in both those with and without cognitive impairment

- Ward JA et al 2010
  - Cluster RCT with project nurse to implement fall risk factor modification in residential care homes
  - No effect

Trials in the community

- Mackintosh and Sheppard 2005
  - N=64, pre and post intervention. No effects
- Pitkala et al 2013
  - N=210, RCT
  - Home exercise and group exercise reduced falls
- Suttanon et al 2012
  - N=40, RCT
  - Improved functional reach and falls risk
- Bharwani et al 2012
  - Pilot study of a behaviour programme reduced falls by 32%
- Wesson et al 2013
  - N=22 RCT strength and balance training and home hazard reduction
  - Non significant reduction in fallers

More recent trials

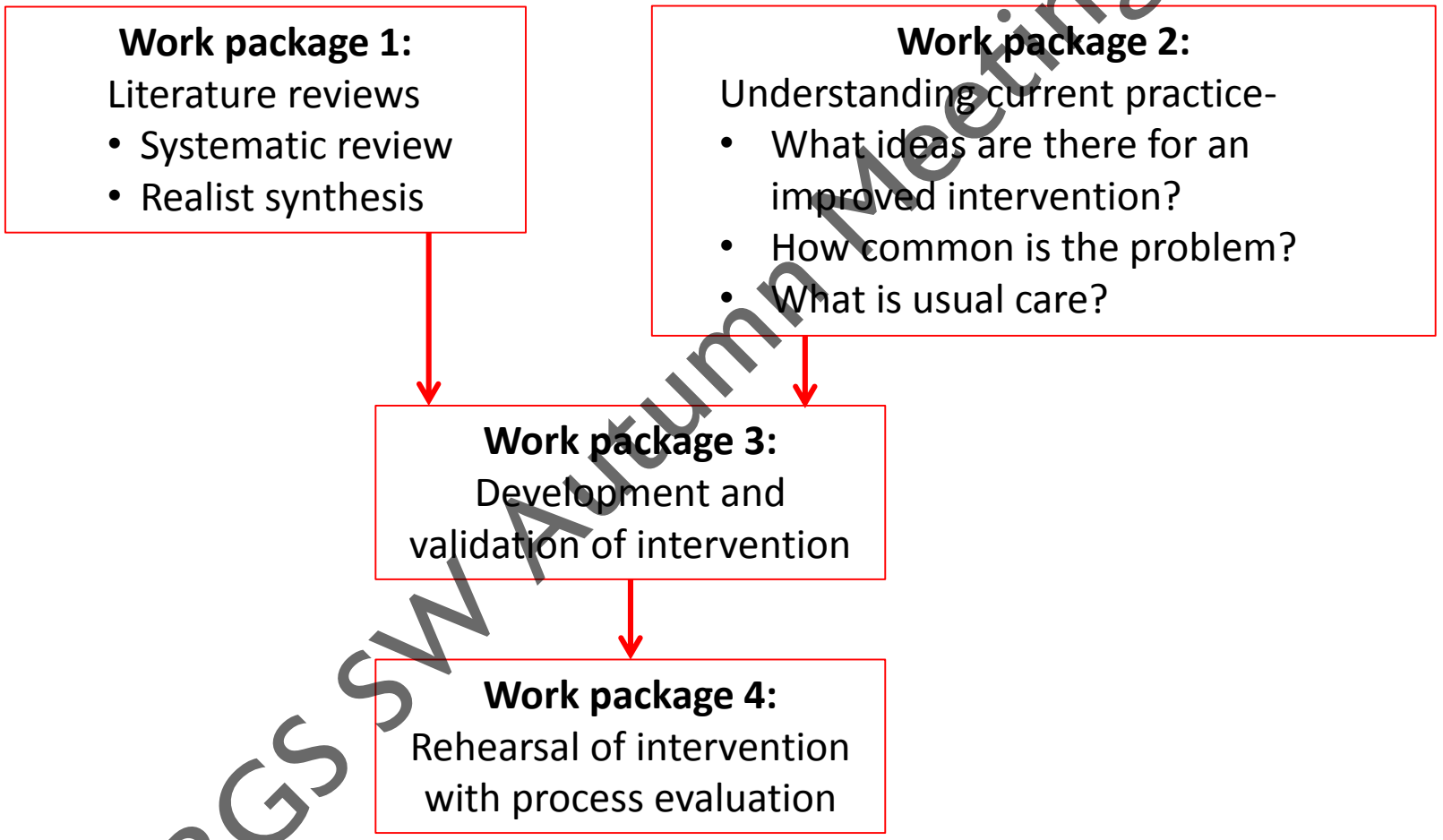
- Close et al 2019 iFOCIS trial
  - RCT dementia patients
  - Physiotherapy intervention
  - No significant effects on outcomes

- Harwood et al PRAISED trial
  - Ongoing trial
  - Dementia and MCI
  - Exercise intervention

DIFRID: A feasibility study

- Patient group:
  - Adults with dementia living in their own homes who have suffered a fall-related injury
- Setting:
  - Community and hospital setting as appropriate
- Control or comparator treatment:
  - Usual care: current UK practice
- Intervention:
  - Develop and validate a complex intervention designed to improve outcomes following fall-related injury
  - Use the updated framework developed by the MRC
  - Consider the role of carers carefully
- Important outcomes:
  - Researchers should develop /define outcomes appropriate for the design of a future trial

Overview of DIFRID



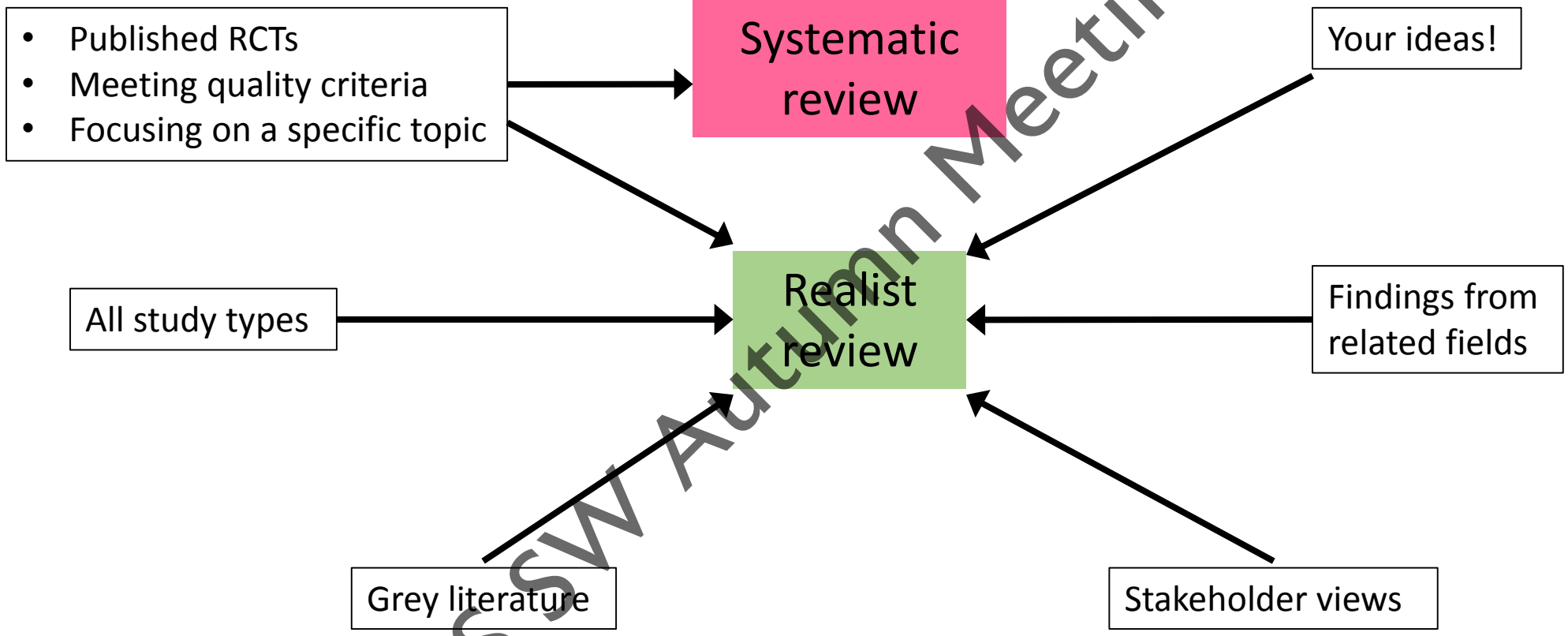
Systematic review

- 7 studies were included.
- 6 RCTs (Huusko et al., 2000; Kennie et al., 1988; Prieto-Alhambra et al., 2014; Shaw et al., 2003; Stenvall et al., 2012; Watne et al., 2014).
- 1 quasi-experimental design (McGilton et al., 2013).
- 6/7 studies were of hip fracture
- A majority of the interventions took place in a hospital setting

Systematic review

- Multi-disciplinary care and early mobilisation showed short-term improvements for some outcomes.
- Only an annual administration of zoledronic acid showed long-term reduction in recurrent fractures.
- Due to high heterogeneity across the studies, definitive conclusions could not be reached.
- Most post-fall interventions aimed at patients with dementia have shown little efficacy.
- There is very little evidence in non-hip fracture injury

What is a realist synthesis - evidence



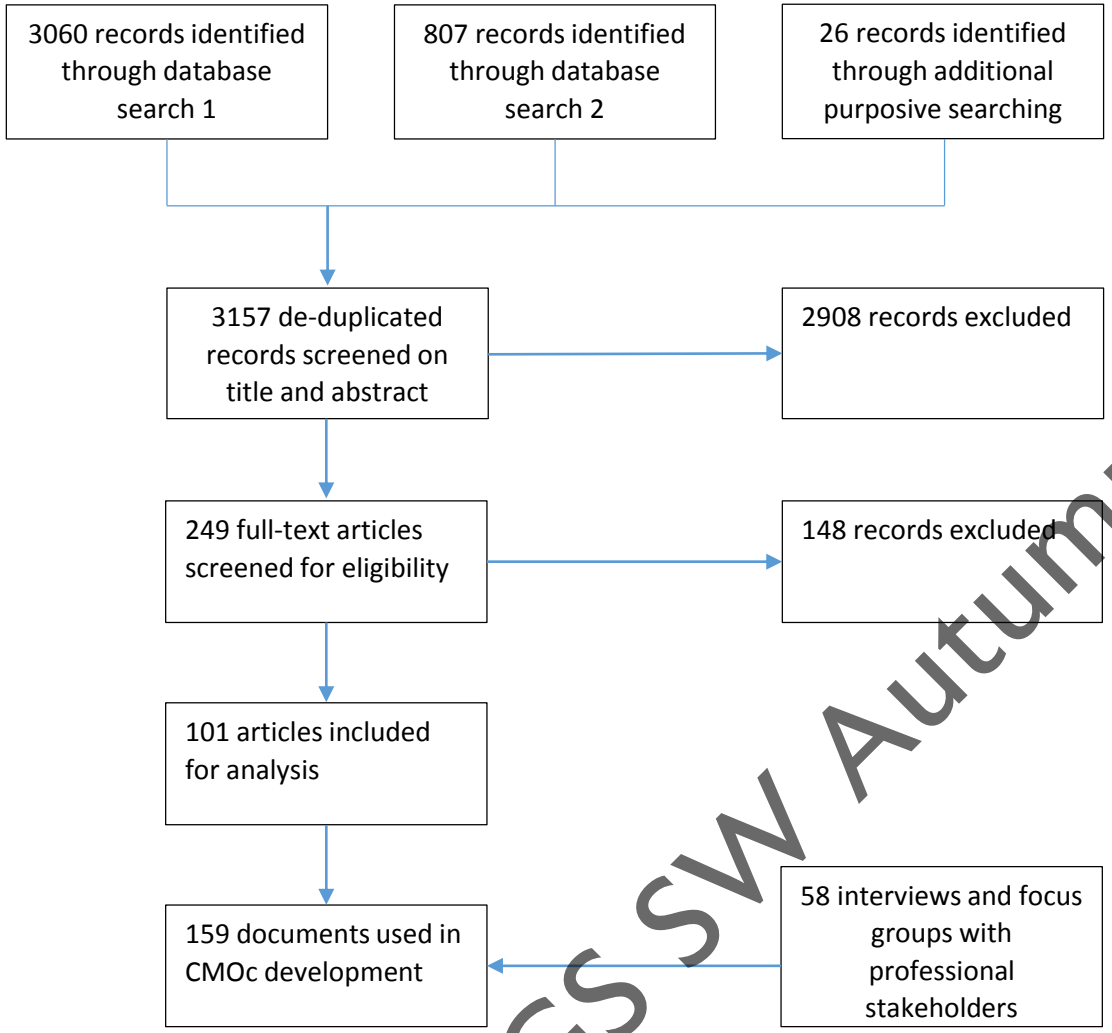
What is a realist synthesis – questions?

x Does it work?

x What works on average?

✓What works for whom, under what circumstances and why?

✓Context – mechanism – outcome configurations (programme theory)



Qualitative data

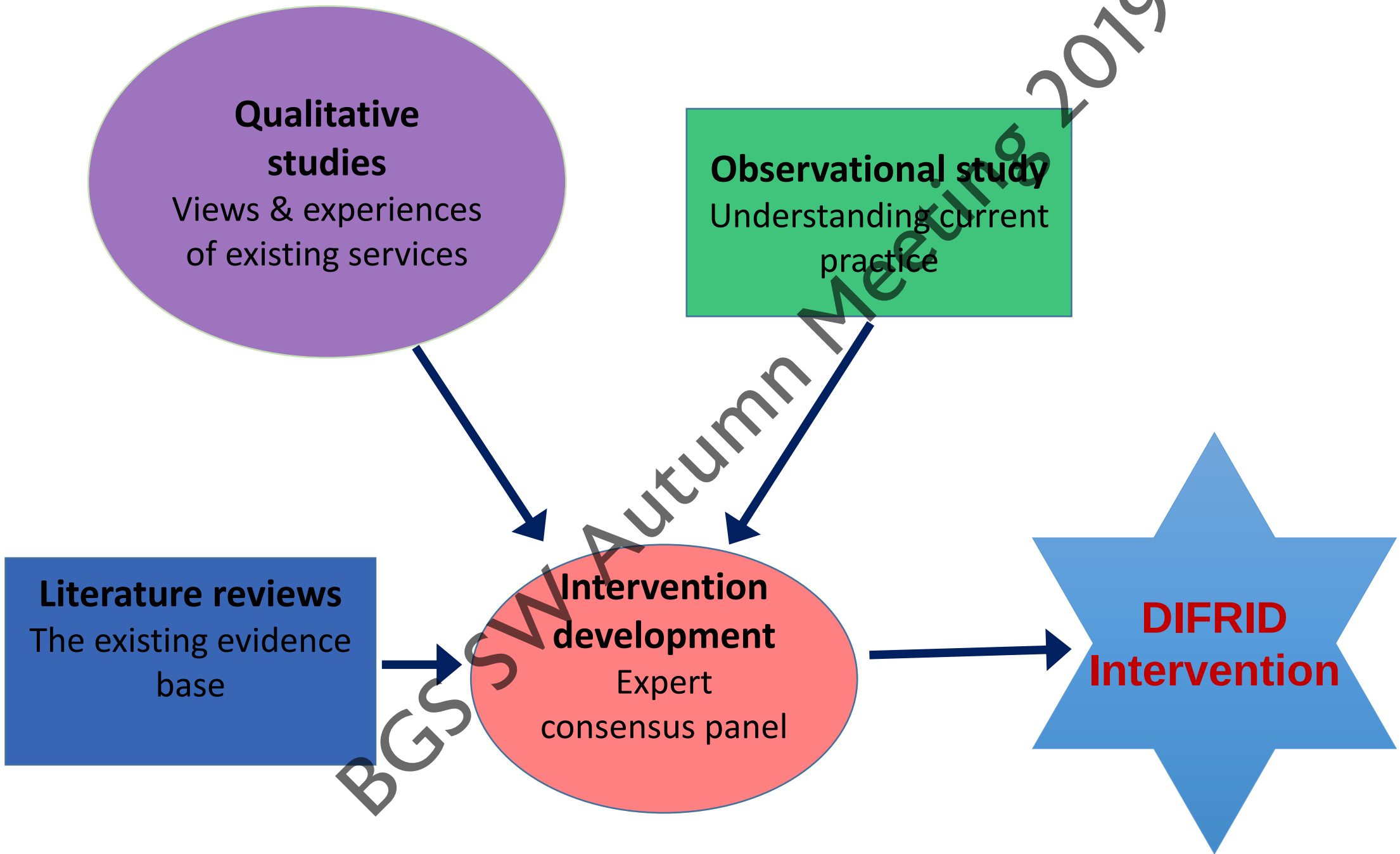
- Interviews & focus groups with professionals
- Observation of current practice
- Interviews with patients & carers

- Integrative analysis
  - Coding frames developed for each dataset
  - Themes mapped across datasets
  - New integrated coding frame produced
  - Highlights similarities and differences across the datasets

CMOc themes identified

The CMOcs cover **three broad areas**:

- Ensure that the **circumstances of rehabilitation are optimised** for people with dementia (CMOc 3, 4, 8, 9)
- Compensate for the **reduced ability of people with dementia to self-manage** (CMOc 2, 5, 6)
- Equip the workforce with the **necessary skills and information** to care for this patient group (CMOc 1, 7, 9)



Sites and Settings

- 3 UK sites
  - Newcastle, Stockton, Norwich
- each including 7 settings:
  - primary care consultations and letters to patients on QOF register
  - paramedic attendances
  - Emergency department (ED) attendances
  - community services
  - supported discharge teams
  - telecare services.
  - Research registers

Inclusion criteria

- known diagnosis of dementia, made prior to entry into the study, by a specialist in dementia care (Geriatrician, Neurologist or Old Age Psychiatrist).
- Diagnosis must be confirmed within 2 weeks by the patient's GP who will be asked to confirm that the potential participant is on the practice's QOF register of people with dementia
- must have sustained at least one fall with or without injury within one month prior to their identification as a potential study participant.
- must be dwelling in the community at the time of the index fall and returning to the community at the time of the intervention.
- must have a family member or other carer available to assist with completion of the diaries.
- Able to communicate in English
- Either has capacity to consent to participation or has personal consultee who is able to give proxy consent

Exclusion criteria

- diagnosis of dementia cannot be confirmed by consultation with the GP or via the secondary care notes within 2 weeks of their being identified as a potential participant.

- participant found to be dwelling in residential or nursing care, or to have been hospital inpatient at the time of the index fall.

- participant refuses consent or lacks capacity and does not have personal consultee.

Intervention

- Multidisciplinary intervention primarily delivered in the participant's home.
- Tailored to the abilities of the participant, their likes and dislikes for activities
- To achieve goals agreed between the therapists and the participant and their carer.
- Delivered over a total period of 12 weeks.

Clinical Assessment

- 2 assessment visits described in a manual for professionals
- Structured and holistic
- Considering the perspective of the patient, carer and other professionals involved with the patient
- Assessment of likes and dislikes, routines and activity preferences
- Discussion of potential goals
- Physiotherapist and Occupational therapist examinations
- Timed Up and Go test
- Lying and standing BP

Therapy visits

- Tailored to the abilities of the participant, their likes and dislikes for activities
- Include strength and balance exercises, dual tasking and functional activities, embedded if preferred
- Targeted at goals agreed between the therapist and the participant and their carer.
- The number of sessions will be tailored to the needs of the participant, up to a maximum of 24 sessions.
- Up to 22 therapy sessions will be delivered over a total period of 12 weeks.
- The therapy procedures will be described in a manual for professionals.

Results

- Intervention delivered to 11 participants
- some difficulties in identifying meaningful goals with or for PWD
- further training and review of goals is needed.
- Further consideration is needed regarding the recruitment of Geriatricians and the function of MDT meetings.
- need to improve the support provided to carers during the intervention.

What does NICE say?

- For guidance on managing the risk of falling for people living with dementia (in community and inpatient settings), see the NICE guideline on falls in older people. When using this guideline:
- take account of the additional support people living with dementia may need to participate effectively
- be aware that multifactorial falls interventions may not be suitable for a person living with severe dementia.

What can we infer from the research so far?

- Consider the patient
  - Severity of dementia
  - Type of dementia
  - Presence of gait disorder
  - Degree of impairment in ADLs
  - Previous fall history

What can we infer from the research?

- Consider the setting
  - Does the patient live in their own home or a care home?
  - Where and why was the assessment triggered?
    - A&E
    - Day hospital
    - Admission to care home

- Consider the management goals
  - Fall prevention
  - Management of recurrent falling
  - Provision of other elements of person centred care

Good Clinical Practice: mild dementia

- An 85 year old lady with mild AD, no previous falls and qualitatively normal gait
  - *No evidence for intervention, but medication review would be good practice*
- The same lady with syncope after starting donepezil
  - *Consider cardiovascular cause*
- The same lady with one previous fall and a cautious gait
  - *Possibly should be managed as though she does not have AD: offer a multifactorial intervention*

Good clinical practice: moderate dementia

- A 75 year man with moderate VAD, walking with a stick, living alone at home, no previous falls
  - *Uncertain, review medication, consider the need to maintain independence*
- A 75 year old man with DLB in A&E with his wife after a fall
  - *Consider medical causes, especially amnesia for syncope*
  - *Consider wider goals: safety of discharge, carer stress*

Good clinical practice: severe dementia

- A 92 year old lady with agitation, walking unsteadily without supervision, living in care home
  - *Consider staff education, sensitive supervision, bed/ chair alarms, causes of agitation, environment and need for occupation*
  - *Balance the risk of falls with quality of life*
  - *Consider hip protectors*
- A 92 year old lady, bed bound, with occasional agitation, living in a care home
  - *Fall risk now low but be aware of recovered mobility when agitated*
  - *Shift goals to pressure care etc.*