



Falls and the Bladder

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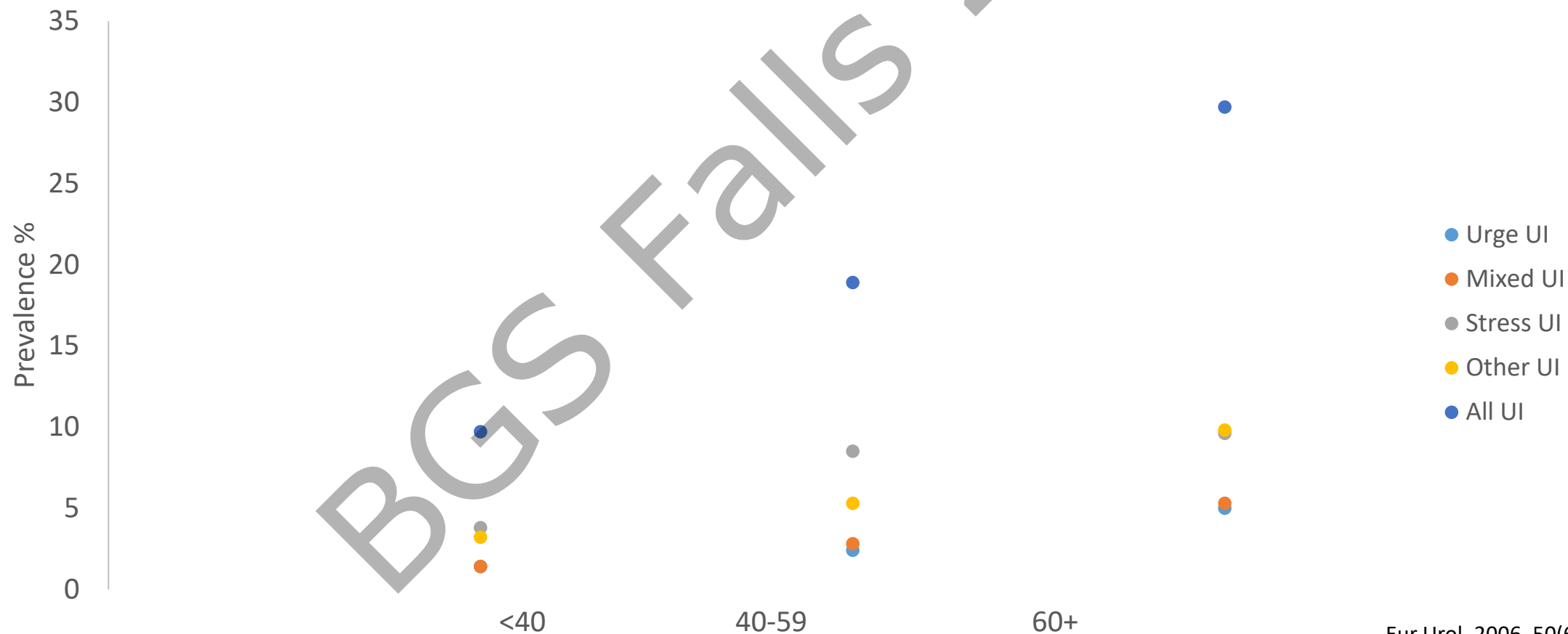


Lower Urinary Tract Symptoms

- Storage symptoms
 - Frequency
 - Urgency
 - Nocturia
 - Urgency Incontinence
 - Stress Incontinence
- Voiding Symptoms
 - Hesitancy
 - Slow stream
 - Straining
 - Incomplete emptying



LUTS are common





Association between Falls and LUTS

- Brown et al
- 6,049 community-dwelling women
- 3 year follow up
- Weekly incontinence associated with increased occurrence of falls
 - OR 1.26 (95%CI 1.14 – 1.40)
- Greater risk of non-spinal fracture
 - HR 1.34 (85%CI 1.06 – 1.69)



Association between Falls and LUTS

- Noguchi et al
- 1,090 community dwelling Australian men
- 2 years follow up
- Weekly UUI associated with falls
- OR 2.57 (95%CI 1.51 – 4.3)



Association between Falls and LUTS

- Chiarelli et al
- Systematic review
- 9 Studies
- Any UI OR 1.45 (1.36 – 1.54)
- Urgency incontinence OR 1.54 (1.41 – 1.69)
- Mixed incontinence OR 1.92 (1.69 – 2.18)
- Community dwelling
- Vast majority women



Association between Falls and LUTS

- Noguchi et al
- Systematic Review
- 3 prospective cohort and 6 cross-sectional studies
- Total 18,492 Community-dwelling men
- Nocturia OR 1.63 (1.00 – 2.68)
- Incontinence OR 1.5 to 1.86
- Frequency RR 1.17 (1.104 – 1.33) (Fractures HR 2.05 1.25 – 3.36)



Other LUTS and Falls

- Nocturia
 - 2 per night OR 1.84 (1.05-3.22), 3 per night 2.15 (1.04 – 4.44)
- Straining in men (OR 1.6)
- Mixed incontinence and falls in the frail (OR 3.05, 95%CI 1.01 – 10.2)



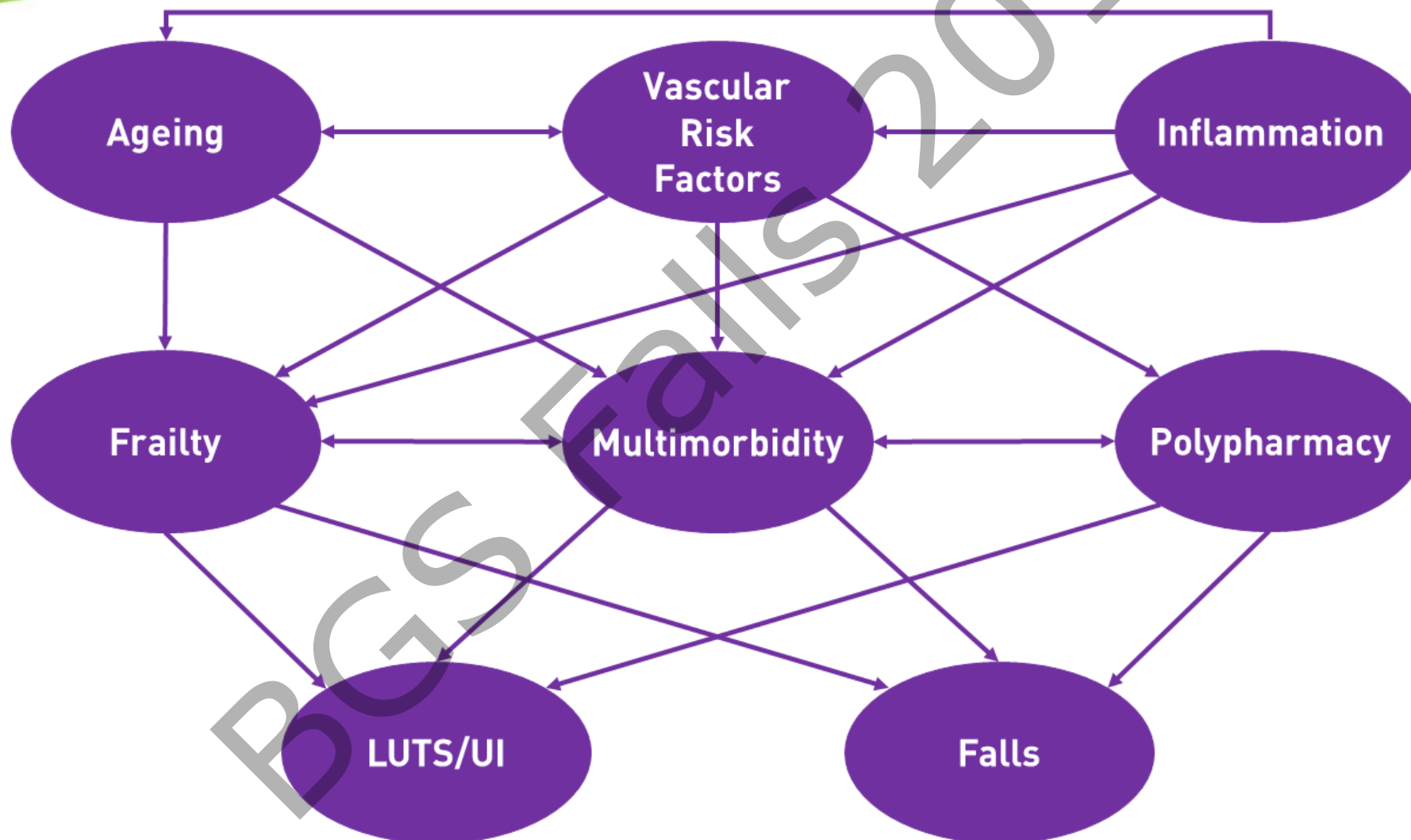
Why?

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Common causes

- Frailty
- Multimorbidity
- Polypharmacy
- Dementia
- Cerebral white matter hyperintensities





Rushing?

- Rushing to the toilet
- Slipping in urine
- No evidence to support these
- Little temporal association between toileting and falls
 - 6% of those presenting with fall to A&E associated it with toileting
 - 14% of falls associated with toileting in PD
 - Continent middle-age women with full bladders slow down



Activity Restriction?

- Reduced activity is associated with increased falls
- Incontinence may lead to activity restriction
 - Likely a bidirectional relationship
 - People with urgency don't go out for fear of incontinence
 - Decondition
 - Increase falls risk
- Good evidence that physical exercise reduces UUI



Cognitive Factors

- Continence is a learned skill
- Maintaining continence relies on activation of numerous areas of the brain
- The bladder is held in “storage mode” by activation of the frontal and prefrontal cortices.
- Older adults and with OAB require greater effort to do this¹⁶



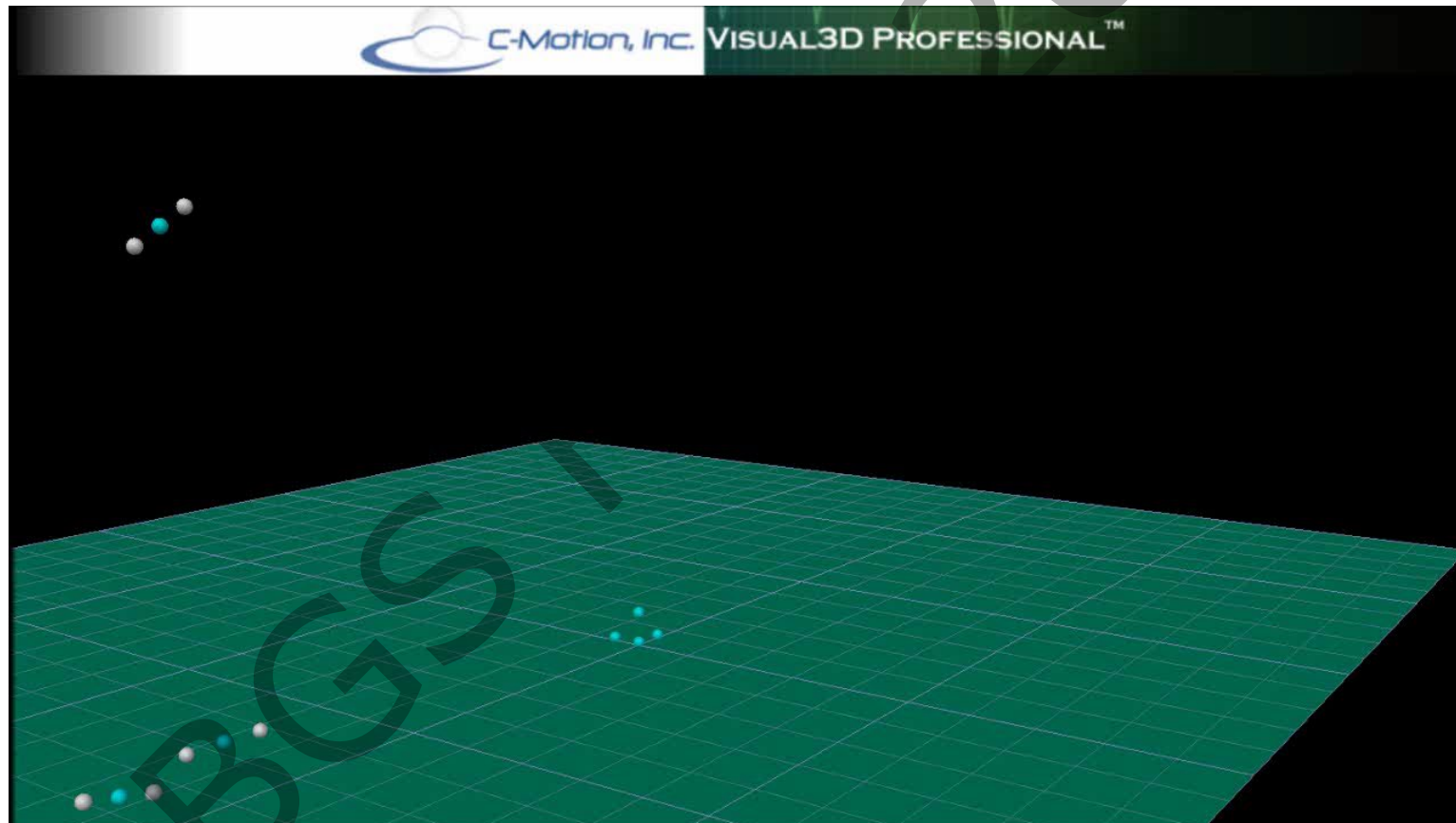
Diverted Attention

- Performing two tasks simultaneously leads to a decline in the performance of one or both tasks
- Induces gait changes in older adults associated with falls
- Is urgency a source of diverted attention?



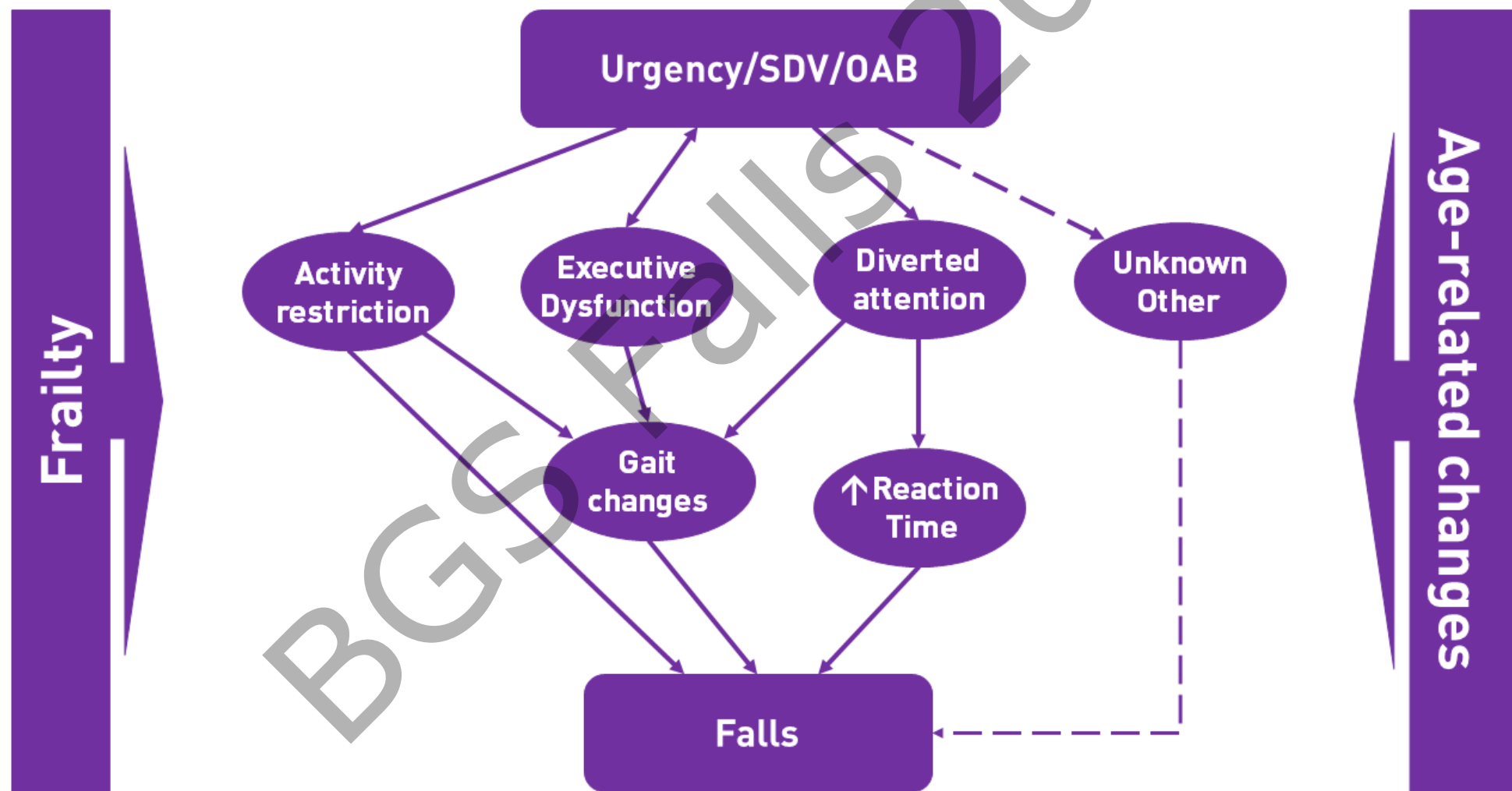
Urgency as a source of diverted attention

- Adults aged over 65 with a clinical diagnosis of OAB
- 3D Instrumented Gait Analysis under 3 conditions
 - Undistracted
 - Distracted by the n back test
 - Experiencing urgency
- Urgency induced by drinking non-caffeinated fluids *ad lib*
- Until a sudden compelling desire to void that was difficult to defer was experienced





Gait Parameters (n=27)				Significance	
	Baseline (mean(SD))	Urgency (mean(SD))	Distraction (mean(SD))	Baseline to Urgency	Baseline to Distraction
Velocity (m/s)	1.1 (0.16)	1.0 (0.15)	0.8 (0.19)	p=0.008	p<0.001
Cadence (steps/min)	110 (9.08)	108 (11.2)	94 (18.14)	p=0.805	p<0.001
Stride Length (m)	1.19 (0.16)	1.12 (0.13)	1.0 (0.13)	p<0.001	p<0.001
Step Width (cm)	10.8 (0.7)	10.9 (0.7)	12.0 (0.6)	p>0.99	p=0.25





LUTS are often not considered in falls assessment

- UK National Clinical Audit of Falls and Bone Health
- 63% of those with #NOF had continence assessed
- 41% of these reported LUTS
- 21% with non-NOF fragility fracture
- 27% of these reported LUTS
- Half with issues were treated or referred
- Assessment of LUTS is recommended in most falls guidelines



Intervention Studies

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Potential Interventions

- Mobility exercises improve UI
- Conservative management of OAB
 - Bladder training
- Pharmacological management of OAB
 - Several agents have good safety data in older people
- Dual Task Training?
- Environmental modifications
 - Lighting, bedside commodes



Summary

- LUTS are common and under-reported
- There is a reasonable strong association between LUTS and falls in older people
- This is likely to be multifactorial
- Evidence for urgency acting as a source of diverted attention
- Ask about LUTS and UI in those presenting with a fall
- Even though there's no evidence (yet) for treatment



Thank you for your attention

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