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Inpatient falls, clinical outcomes and quality initiatives

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BGS, Cardiff – 12th April, 2019

No conflicts of interest, nothing to declare

Overview

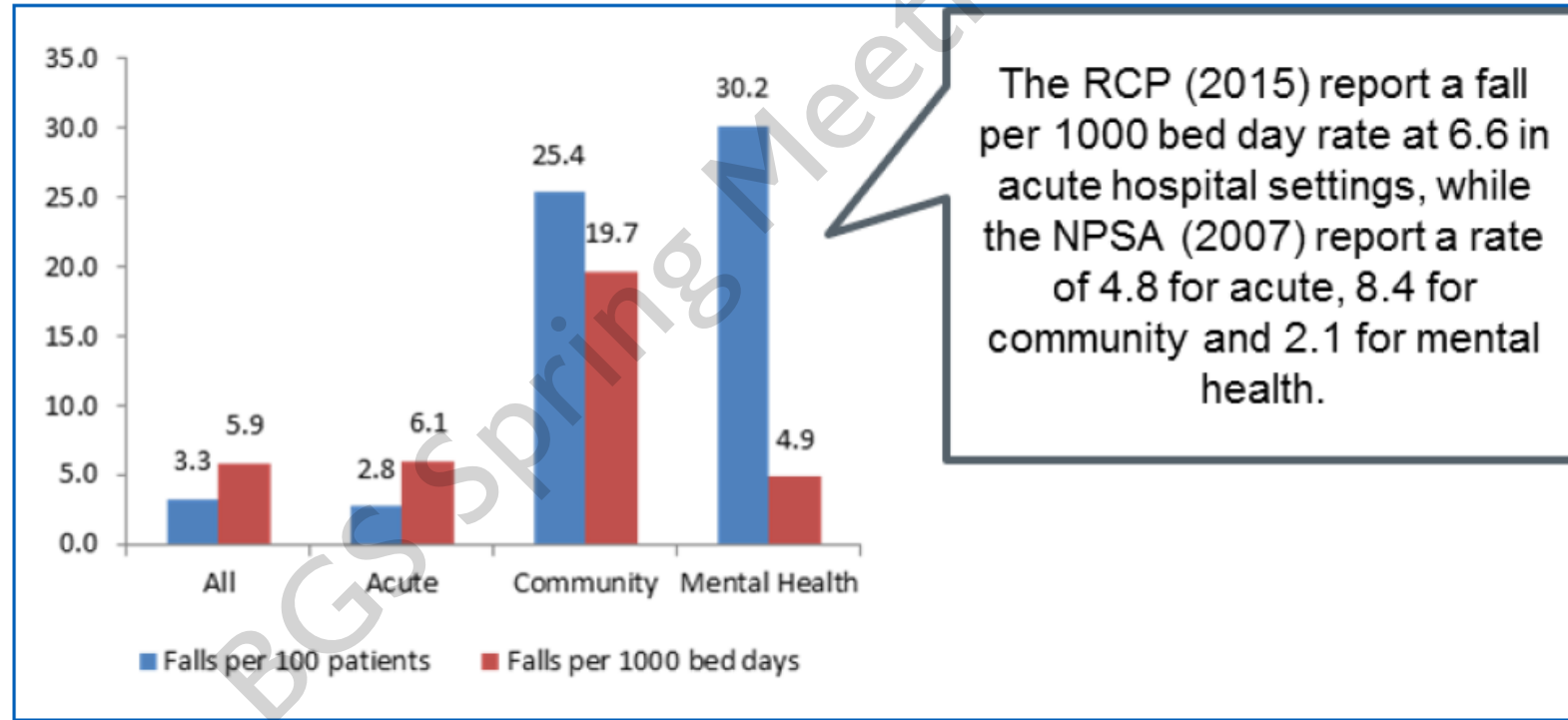
- ✦ Introduction to the problem
- ✦ Benchmarking of the data
- ✦ Quality Improvement work
- ✦ Metrics - Process /Outcome/Benefits

Epidemiology of IF

- ❖ Variable **falls rate** among hospitalised older adults
 - 2 % in an acute setting
 - 12.5% in a rehabilitation/community setting
- ❖ Overall, the **intensity of falls/1000** patient-bed-days has been reported as
 - **2.2** in acute setting
 - **9.2** at the geriatric rehabilitation wards
 - **17.1** in in the psychogeriatric ward setting

- **Inpatient Falls are the most commonly reported safety incidents.**

NPSA (2011) reported 282,000 falls/year including 900 severe incidents of patient harm and 90 deaths on NHS wards ⁴



The incidence and costs of inpatient falls in hospitals

July 2017



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Age group	Total falls (15/16)	Breakdown by severity (%)				
		No harm	Low harm	Moderate harm	Severe harm	Death
Under 65	57,000	73.4	24.9	1.5	0.2	0.0
Over 65	190,000	71.1	26.0	2.2	0.6	0.1
Total	247,000	71.9	25.5	2.0	0.5	0.1

Inpatient falls more than 3 times higher in above 65

Conclusions from IF Audit 2015

- Tackling the problem of inpatient falls is challenging
- There are no single or easily defined interventions
- ❖ Multiple interventions performed by the multidisciplinary team and tailored to the individual patient **can reduce falls by 20–30 %**



Key recommendations

- ❖ Leadership on patient safety
- ❖ Assessment of patients
- ❖ Falls resulting in hip fracture
- ❖ Numbers of falls
- ❖ Dementia and delirium
- ❖ Falls multidisciplinary working group



Impact of IF

❖ Minor injuries

- Reduced physical function
- Reduced mobility
- Psychological impact – Patients and carers

❖ Major injury

- Head injury
- Hip fracture (more than 3,000 per year)
- Morbidity and Mortality

❖ Financially expensive

- Longer hospital stay
- Increased care need

The incidence and costs of inpatient falls in hospitals

July 2017



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Severity of harm	Average cost per fall (£): Direct impacts only		Average cost per fall (£): Direct + indirect impacts	
	Over 65	Under 65	Over 65	Under 65
No harm	2,621	1,337	2,621	1,337
Low harm	2,903	1,495	2,949	1,540
Moderate harm	8,068	5,328	8,519	5,779
Severe harm	10,587	7,237	14,197	10,847
Death	0	0	6,769	6,769

Average cost / IF above 65 years = £2600 to £14000

Impact on US

- ❖ Increase stress and worry
- ❖ More complex nursing needs
- ❖ Less time with other patients
- ❖ More complex discharge planning
- ❖ Personal anxiety
- ❖ Fear of litigation

Clinical outcomes – Literature

- ❖ IF tend to result in **more serious** complications ¹
 - 10 – 25% of such falls resulting in fracture or laceration
- ❖ **Inpatient hip fractures have higher mortality** when compared to those from the community ²
 - Odds ratio: **2.2 times** higher for inpatient hip fracture
 - Odds ratio: **raised** for both 90-day and one-year mortality

Outcome of in-patient falls in hospitals with 100% single rooms and multi-bedded wards



INDERPAL SINGH¹, JUSTIN OKEKE¹, CHRIS EDWARDS²

Age and Ageing 2015; **0**: 1–4
doi: 10.1093/ageing/afv124

SR vs MB-W sites
18 months each
Study completed – 2014
n=759

Mean incidence of falls/1000
patient-bed days
M-BW = 5.44 ± 4.76
SR sites = 15.82 ± 19.56 (P < 0.01)

The hip fracture incidence/1,000 patient-bed days
M-BW 0.04 ± 0.38 (4 hip fracture/18 months) and
SR 0.15 ± 1.00 (12 Hip fractures/18 months) (P < 0.01)

Impact of Cognitive Impairment on Inpatient Falls in Single Room Setting and its Adverse Outcomes

Singh I^{1*}, Edwards C² and Okeke J³

Two years study
n=676

	Cognitive Impairment	No Cognitive Impairment
No. of patients	35.8% (242/676)	64.2 (434/676)
Falls incidents	814	797
Mean falls/patient	3.36 $\pm$ 4.0	1.84 $\pm$ 1.7 (p<0.001)

Conclusion

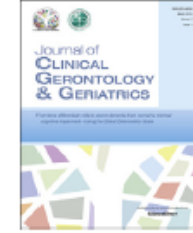
Older people with CI have significantly **higher incidence of inpatient falls** and **adverse outcomes**



Contents lists available at ScienceDirect

Journal of Clinical Gerontology & Geriatrics

journal homepage: www.e-jcgg.com



Original article

Journal of Clinical Gerontology & Geriatrics 7 (2016) 87–92

Profile of inpatient falls in patients with dementia: A prospective comparative study between 100% single rooms and traditional multibedded wards



Sophie Knight , Inderpal Singh

100 acute dementia patients: SR and MB-W (2016)

Conclusion

- ◊ Patients with dementia were at an **increased risk of recurrent IF in single rooms** compared with MB-Ws.
- ◊ There was **no significant difference in terms of injury, hip # or mortality** between the two settings.

Dementia – Not a problem but a reality!!

- Over 850,000 people with dementia in the UK
- Projected to rise to over 1 million by 2025
- 1/3 inpatients have cognitive impairment
- **Increased risk of falls (2-3 times)**

Submitted from



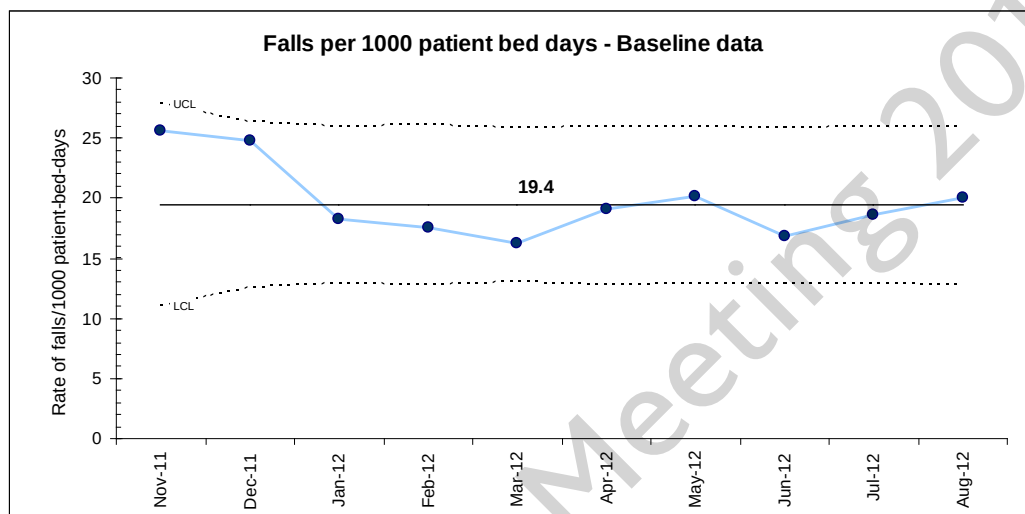
Reducing inpatient falls in a 100% single room elderly care environment: evaluation of the impact of a systematic nurse training programme on falls risk assessment (FRA)

Inderpal Singh, Justin Okeke *BMJ Quality Improvement Reports* 2016;5:u210921.w4741

❖ Objective of quality initiative

- Reduce the incidence of inpatient falls
- Minimise any associated adverse outcomes

Baseline measurement



U-control chart displaying incidents of inpatient falls over 10 months.

- **Process mapping exercise**
 - Falls awareness and staff teaching rather than environment
 - Staff perception and attitude
 - Falls – Nursing problem and not a ‘MEDICAL PROBLEM’

How will we know that our innovation has been a marked improvement?

- **Measurements**
 - **Process**
 - **Clinical Outcome**
 - **Benefits**

Process

- Compliance with all aspects of Falls Risk assessment

British Geriatrics Society 2014 Spring Meeting

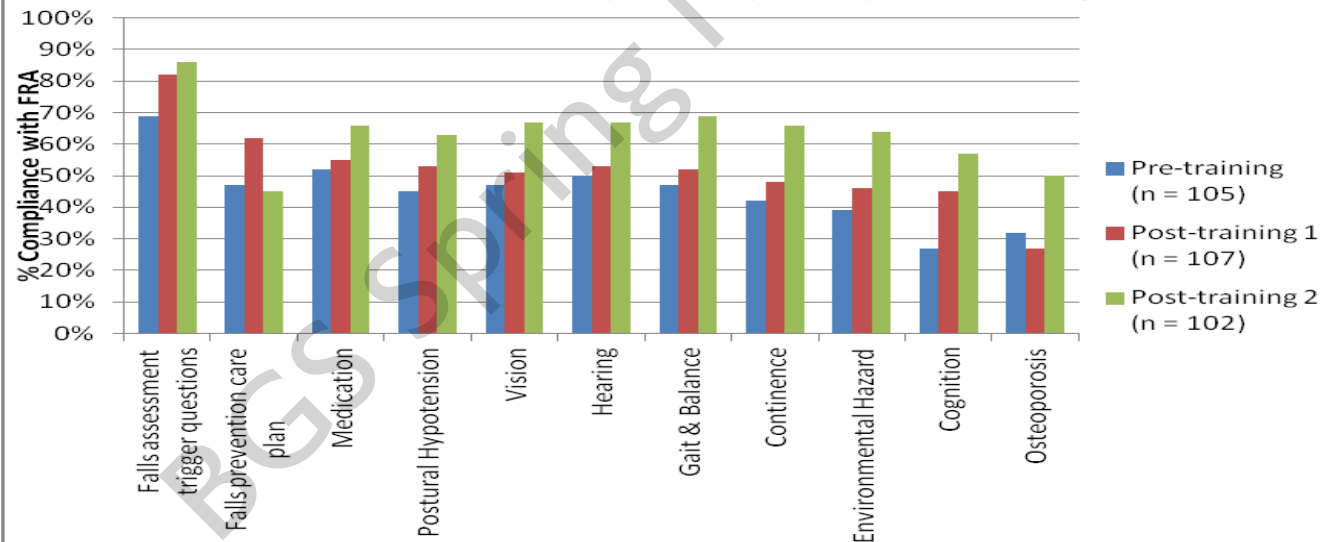
CLINICAL EFFECTIVENESS

FALLS ASSESSMENT IN AN ACUTE AND REHABILITATION HOSPITAL. HOW WELL ARE WE PERFORMING ?

J Okeke¹, C Twine², I Singh²

1. University Hospital of Wales, Cardiff, 2. Ysbyty Ystrad Fawr, Caerphilly (ABUHB Wales)

Falls Risk Assessment Compliance pre & post training





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Results and Measures

How will we know that our innovation has been a marked improvement?

- Measurements
 - Process
 - **Clinical Outcome**
 - Benefits

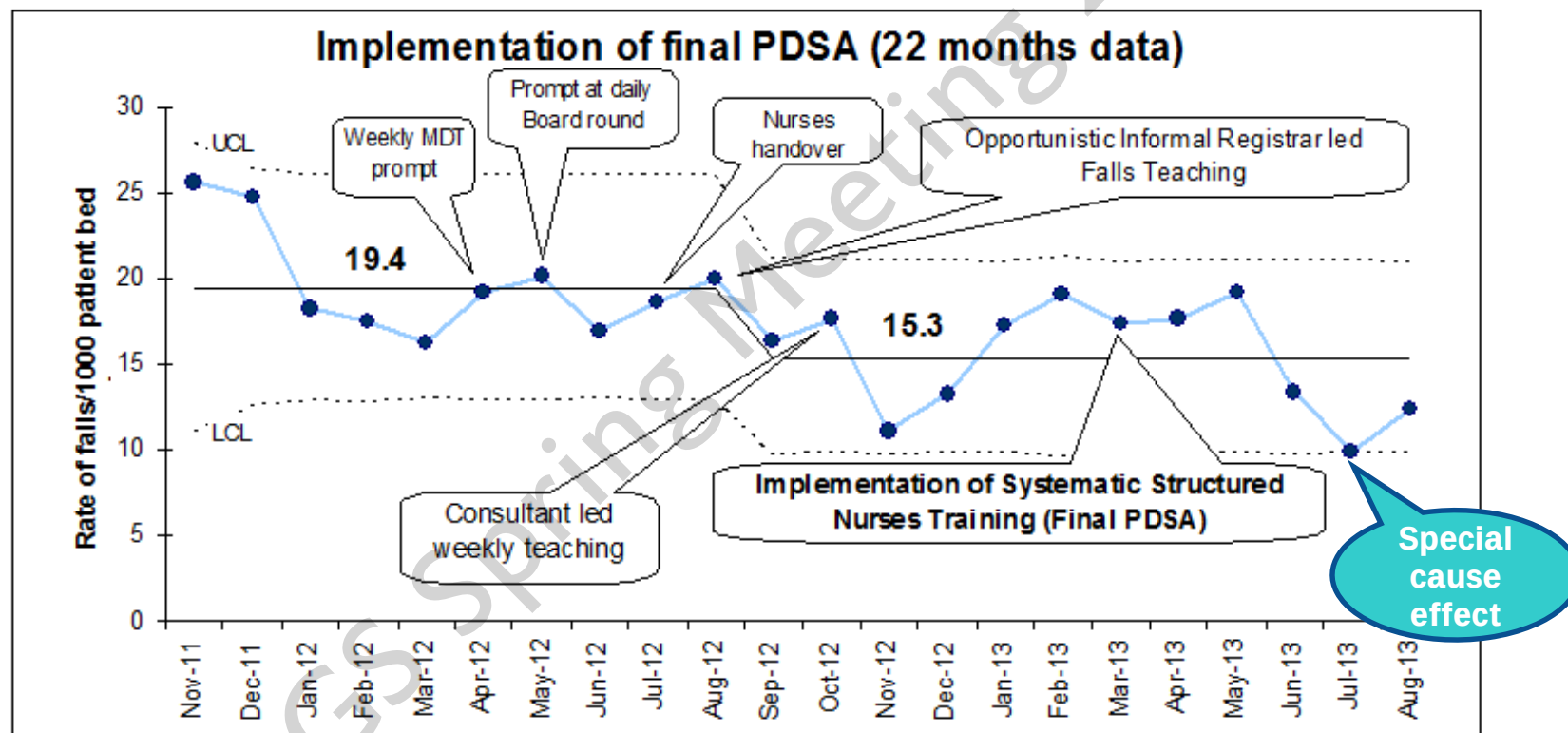


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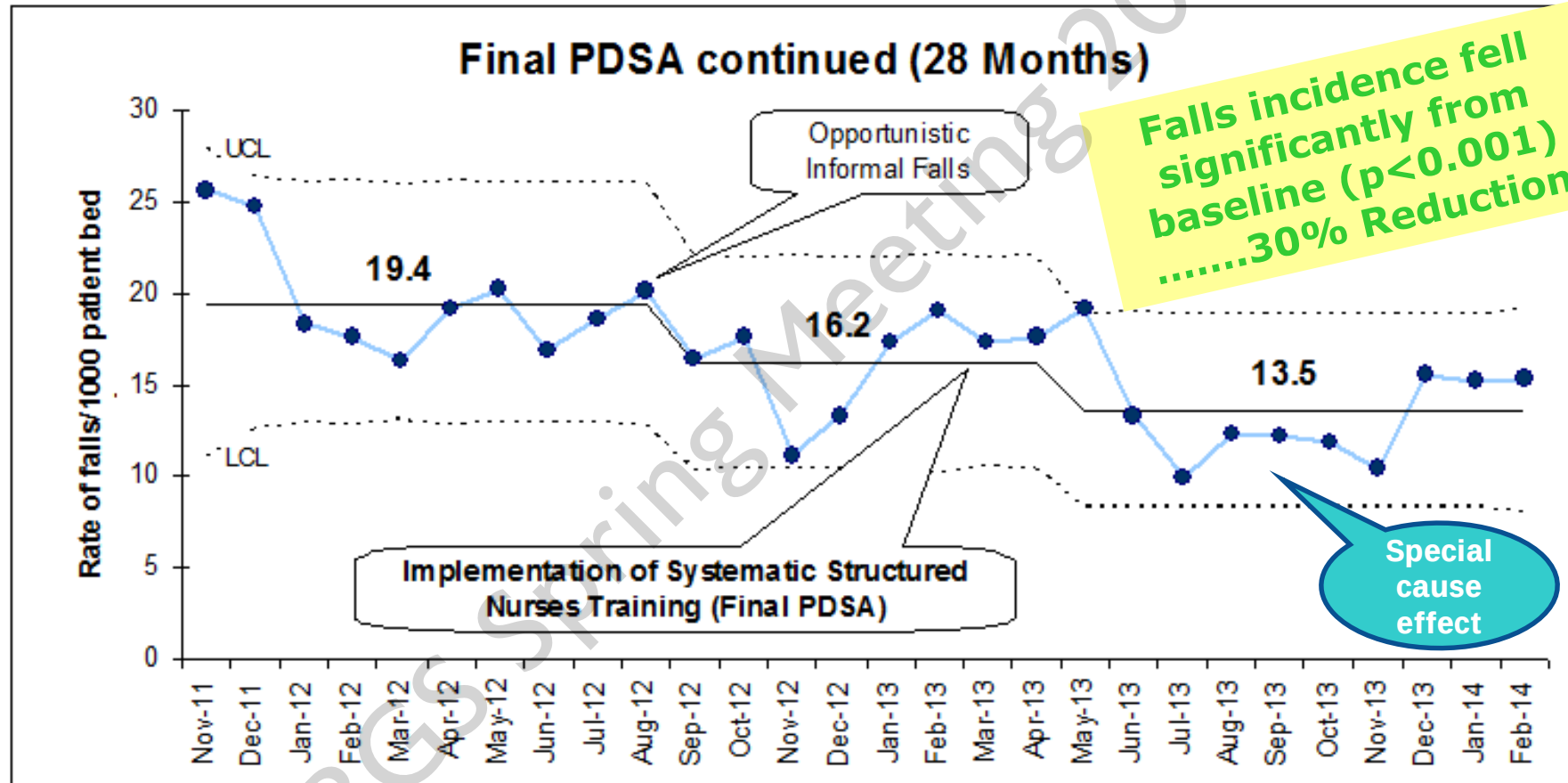
Final PDSA - Intervention – Systematic structured training on falls nurse training programme

Falls incidence fell



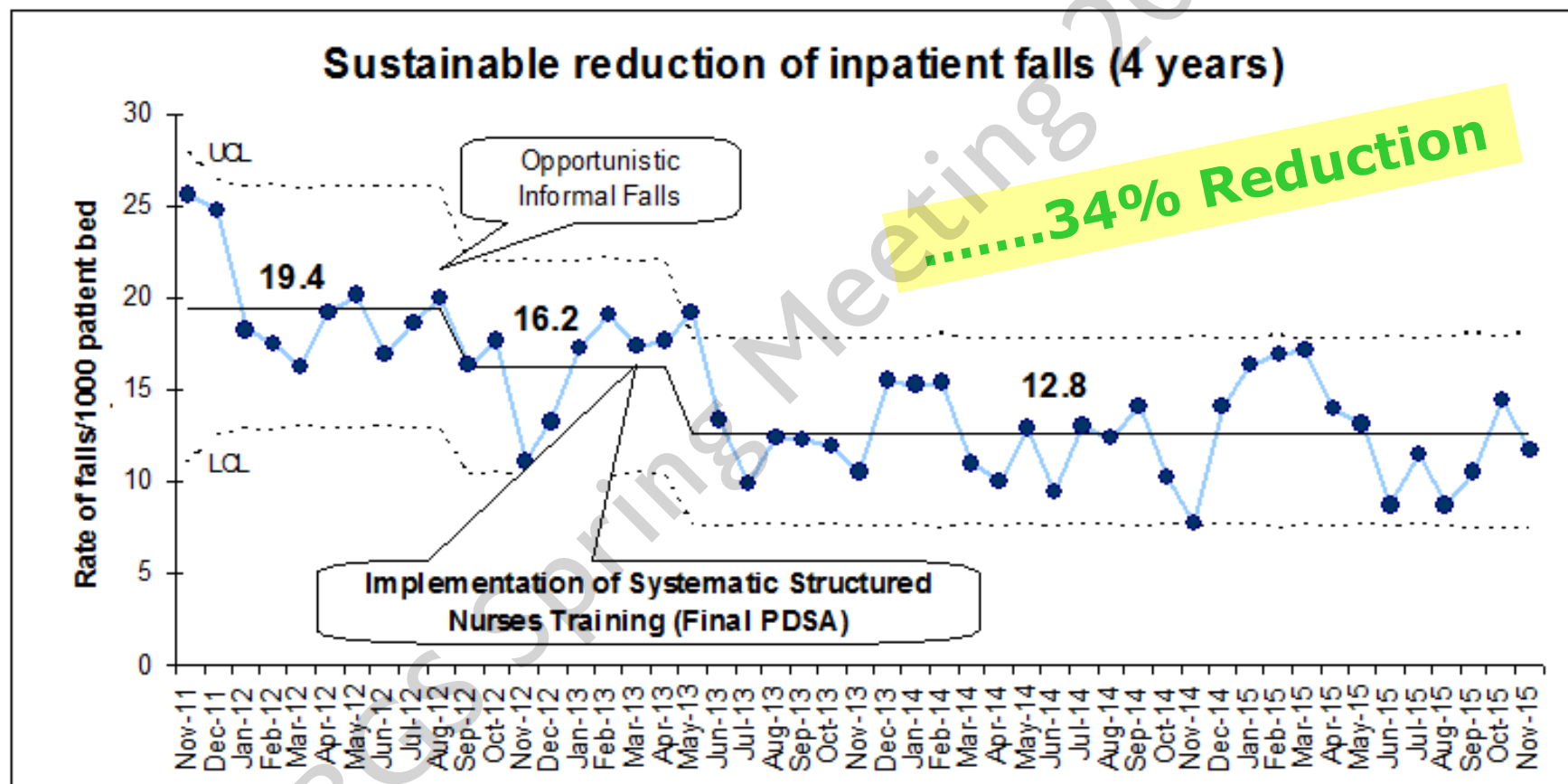
Statistical process U-control chart displaying reduction of inpatient falls (22 months)

QI - Continued



PDSA continued - Statistical process U-control chart displaying reduction of inpatient falls

PDSA – Sustainability



Statistical process U-control chart displaying incidents of inpatient falls over 4 years

Clinical outcome (n=1046)

	Pre-training 17 months data	Post-training 20 months	P value
Discharge destination			
Own Home % (n)	50.7% (249/491)	51.6% (286/555)	0.67
New Care Home% (n)	20.5% (87/425)	17.5%(83/475)	0.23
Length of stay (days)			
Mean	43 ± 39	41 ± 36	0.7
Median	34 ± 39	32 ± 36	0.7
Mortality			
Inpatient (IP)	18.9% (93/491)	15.7% (87/555)	0.16
30-day Post discharge	8% (32/398)	4.7% (22/471)	0.04
6 months Post discharge	25.1% (100/398)	18% (85/471)	0.01

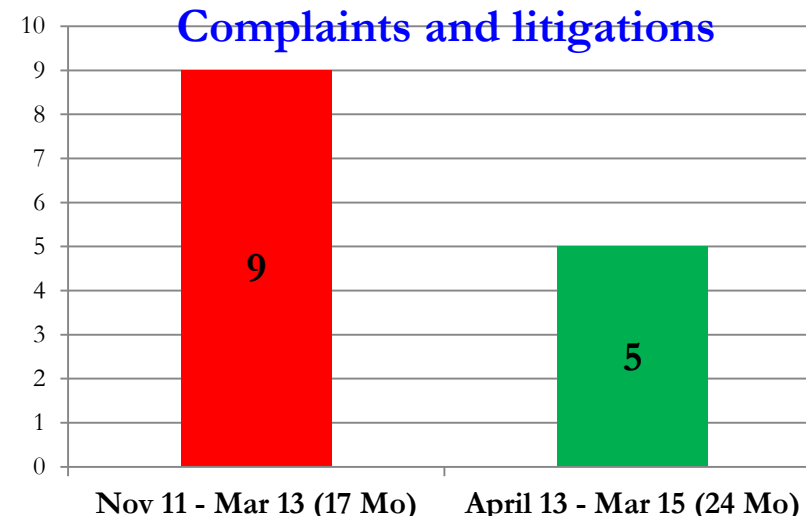
Benefits to HB

Cost savings from bed days = £330,247

*Cost saving from preventing
new CH placements = £311,808*

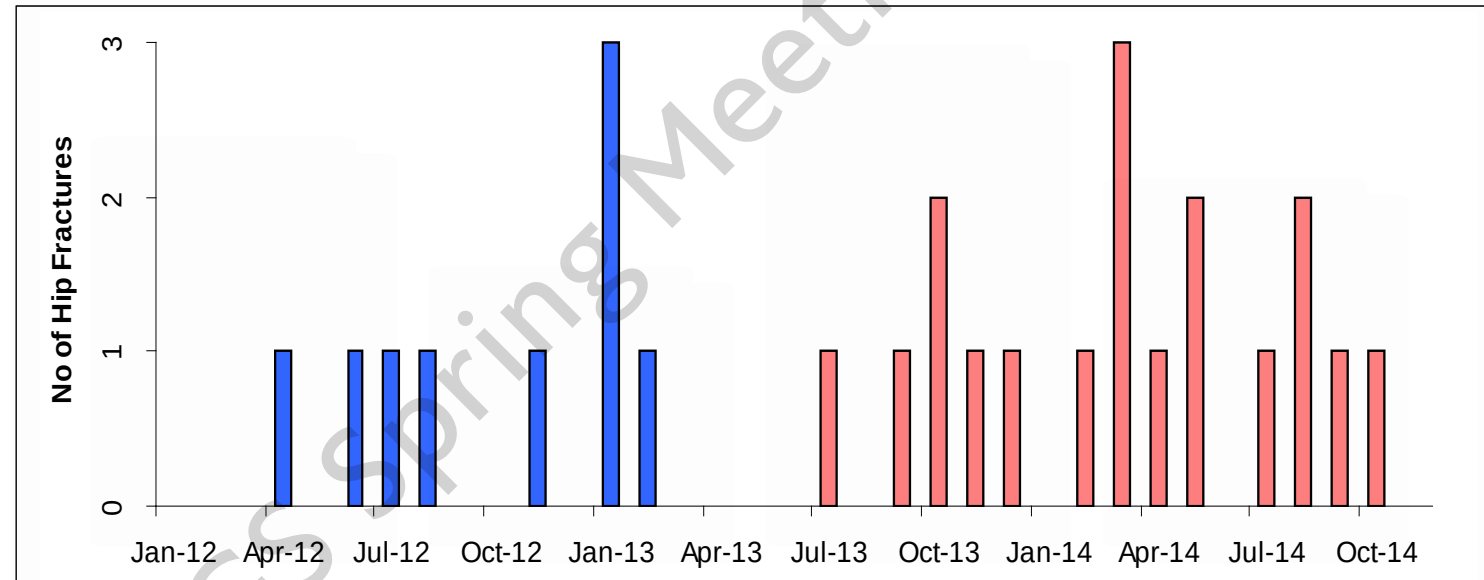
TOTAL COST SAVINGS/year = £642,055

**Total cost saving well
above £642,055**



So, have we made a real change? or Can we improve it further?

- 9 fractures (17 months) and 18 fractures (20 months)

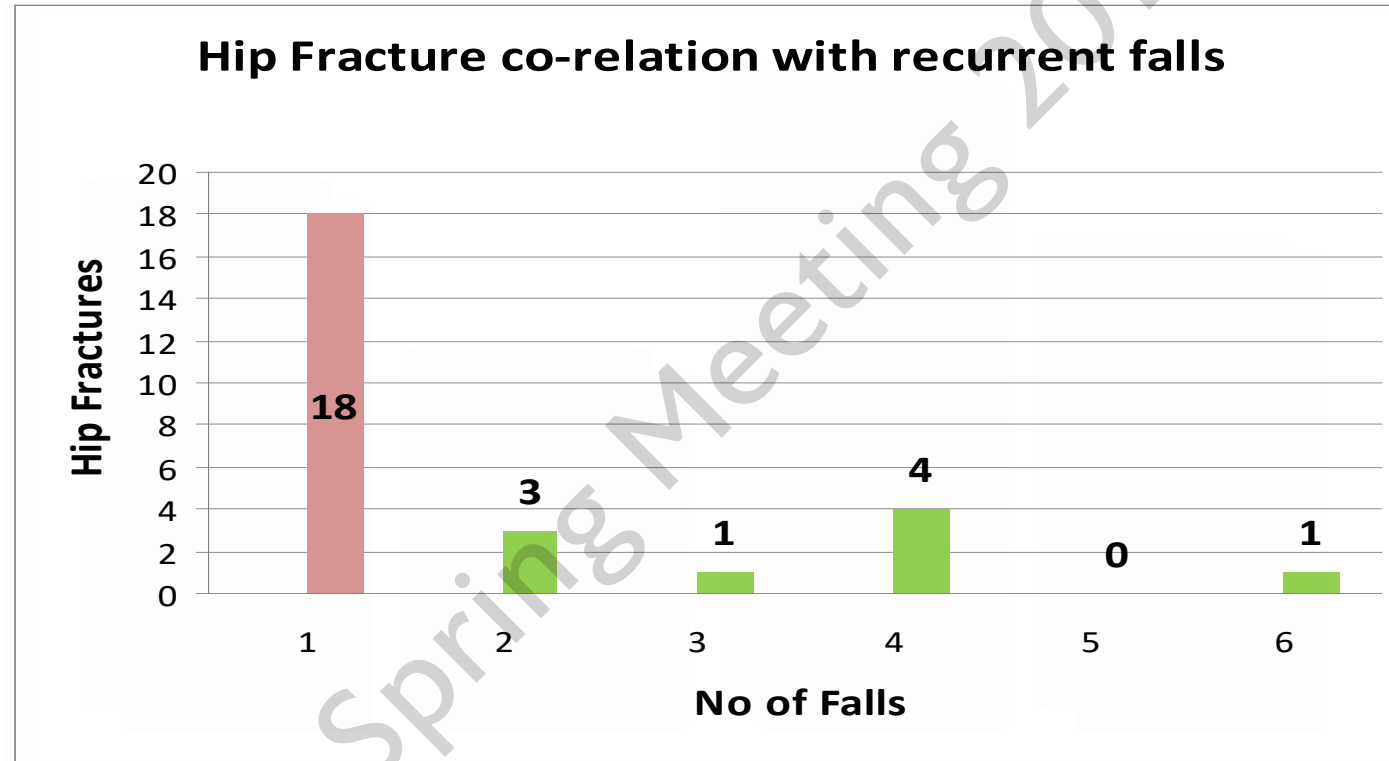


Small numbers – so need further data!

	Pre-training 17 months data	Post-training 20 months	P value
Demographics			
Age	82 ± 10	81 ± 10	0.02
Sex (females, %)	51.7	54.1	0.45
Profile of Inpatient falls			
Falls incidents	1241	1108	N/A
Mean falls/1000 patient-bed-days	18.19 ± 3.46	12.66 ± 2.84	<0.01
Number of patients affected % (n)	46.9 (491/1046)	53.1 (555/1046)	N/A
Mean falls/in-patient faller	2.54 ± 3.14	1.84 ± 1.72	<0.01
Recurrent falls: Range	1-33	1-20	N/A

Only prevented recurrent falls significantly!

Further analysis of the problem



We need to prevent
'THE FIRST FALL' in the hospital

Yet another QI

New PDSA - MDT Approach

- ‘Enhanced Physiotherapist Intervention’
 - for those at a very high risk of inpatient fall
 - to avoid the ‘FIRST IF FALL’

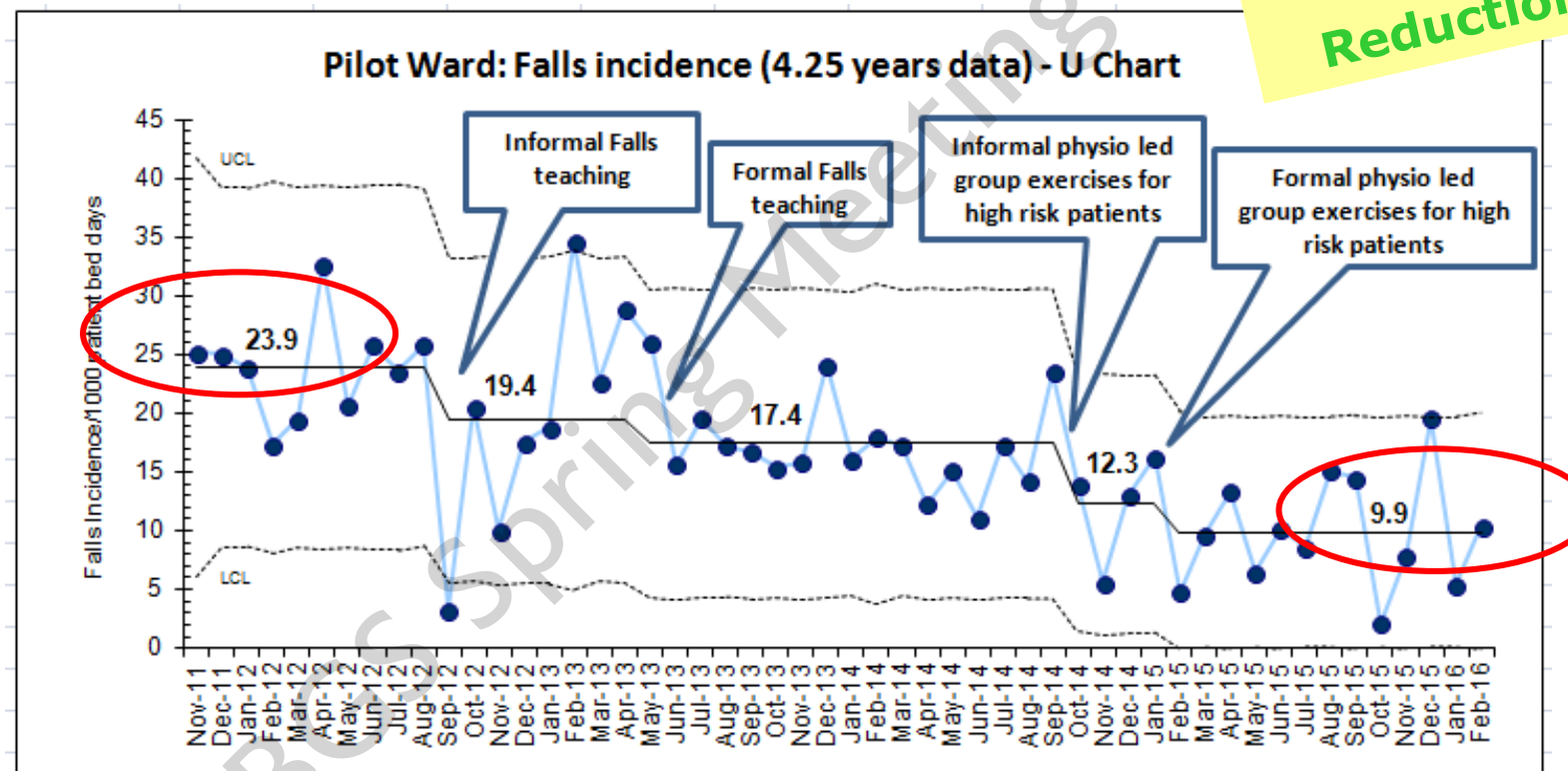


Enhanced PT
led exercise

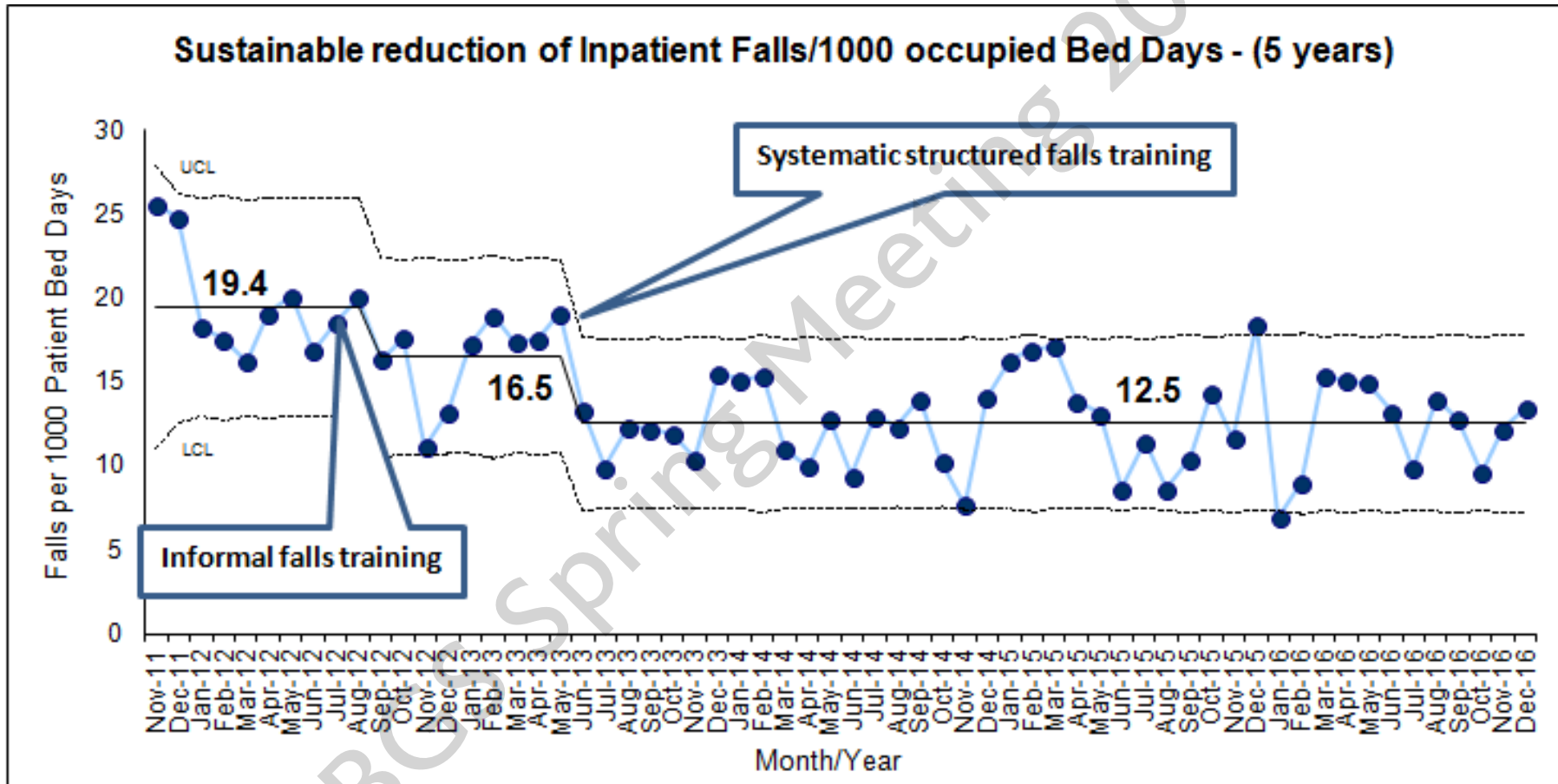


Tools to predict falls in the hospitals have no evidence base!

Multidisciplinary approach including Nurses training and enhanced Physiotherapist intervention have shown the MAXIMUM REDUCTION of inpatient falls



Sustainability – whole hospital





Article

Geriatrics 2017, 2, 4; doi:10.3390/geriatrics2010004

Impact of Hospital Design on Acutely Unwell Patients with Dementia

Caitlin Young ¹, Chris Edwards ² and Inderpal Singh ^{3,*}

100 acute dementia patients: SR and MB-W

Conclusion

There was **no significant difference in terms of inpatient falls, injury, hip # or mortality** or discharge to new care home between the two settings.

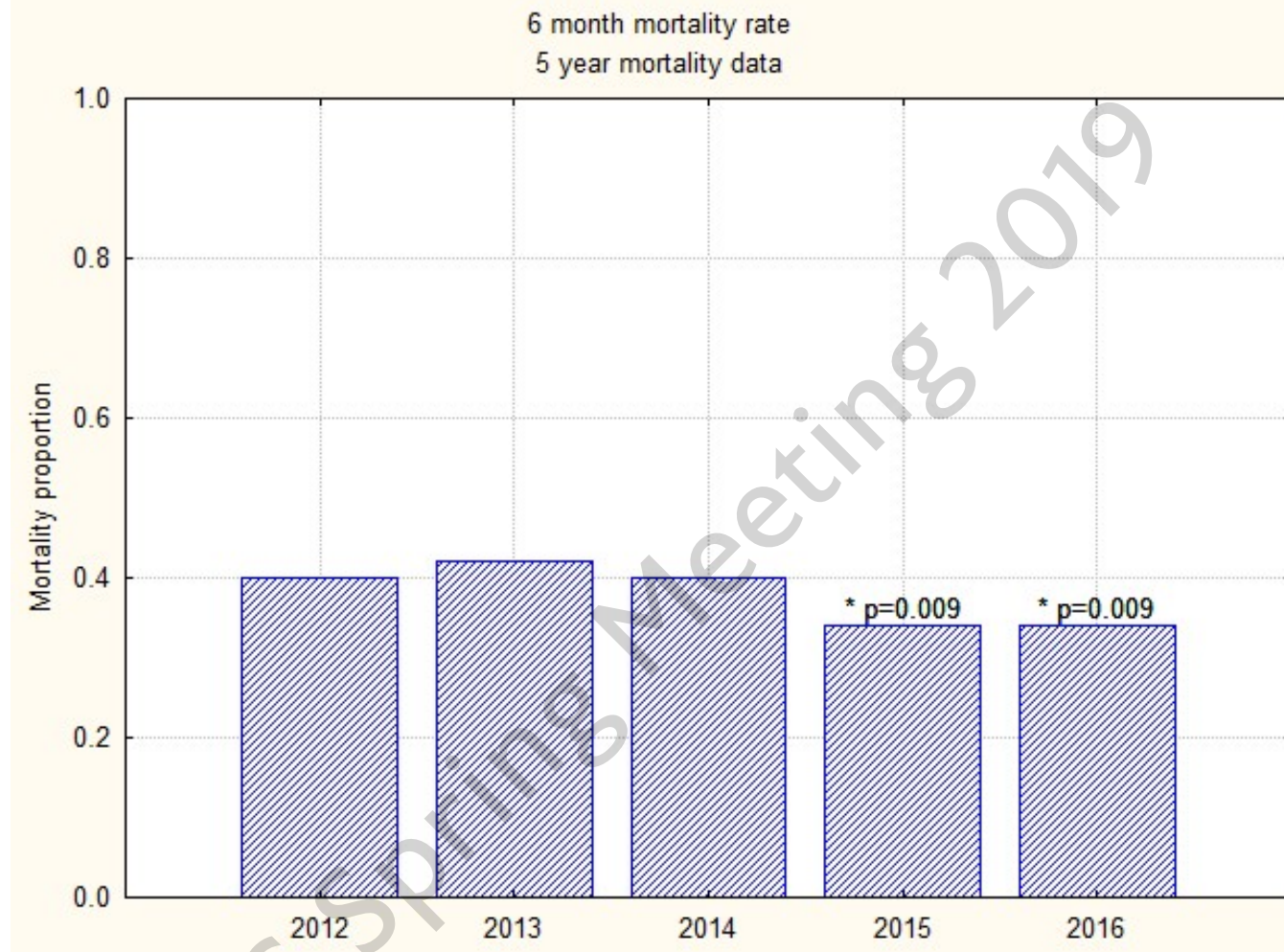


Article

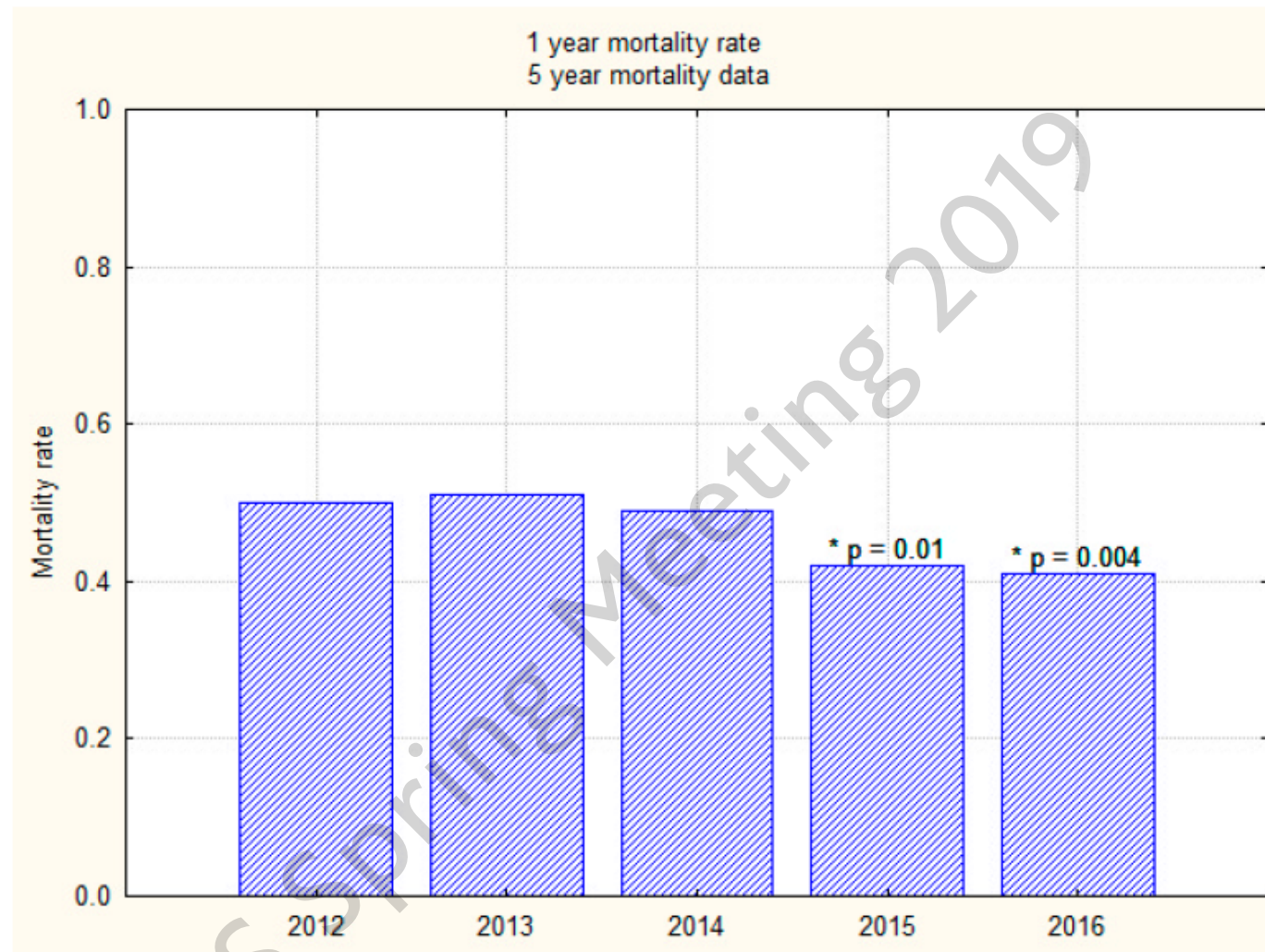
One-Year Mortality Rates Before and After Implementing Quality-Improvement Initiatives to Prevent Inpatient Falls (2012–2016)

Inderpal Singh ^{1,*}, Chris Edwards ² and Anser Anwar ³

- ❖ Overall inpatient mortality for those who sustained an IF was 18.8%
- ❖ 30 day and 6 month mortality were 24% and 38% respectively. Overall 1 year mortality was 47%



A bar graph showing a significant reduction in 6 months mortality trend over 5 years (2012-2016)



A bar graph showing a significant reduction in 12 months mortality trend over 5 years (2012-2016)

INPATIENT HIP FRACTURES: DEMOGRAPHIC PROFILE, CLINICAL OUTCOMES AND RISK FACTORS

I Singh^{1*}, K Hooton², C Edwards³, B Lewis², A Anwar¹, A Johansen⁴ Unpublished

- ❖ Examine the patient characteristics, common falls risk factors and clinical outcomes
- ❖ Between January 2016 and December 2017 we identified all inpatient falls that resulted in hip fracture within ABUHB.

Patients

- ❖ 60%) women (mean age was 81.8 ± 9.5 (range 49-97) years
- ❖ 112 (more than 90%) patients from their own home
- ❖ Mean Charlson Comorbidity Index and the number of medications on admission were 5.5 ± 1.9 and 8.5 ± 3.7 respectively.

Results

- ❖ 45% sustained IHF following the first IF
- ❖ Average IF were 2.7 ± 2.6 before sustaining IHF
- ❖ Mean hospital stay before sustaining IHF was 26.0 ± 28.2 days
- ❖ 20% IHF occurred within 72 hours 31% within 7 days of admission

Falls risks

- ❖ Most common comorbidity was dementia, reported in 63% patients (n=75)
- ❖ Half of the patients were walking with aids, polypharmacy and immobility
- ❖ 31% had delirium at the time of the fall that led to their IHF

Inpatient falls and IHF rate

- ❖ 1,424 patients presented with hip fracture during 2 years
- ❖ 118 (**8.2%**) of these sustained their injury during their hospital stay
- ❖ Based on 982,858 occupied bed day, **rate of IHF of 0.12 / 1,000 OBD**
- ❖ Based on all admissions over 65, across all specialities was 100,903 over 2 years, the **rate of IHF was 1.17 for every 1,000 such admissions**

Do we have any benchmarks?

❖ Danish study (2000-2012) *Int J Clin Pract 2015; 69: 703-709.*

- Rate of IF related major injury among patients aged 75 and over, increased significantly from **0.18 to 0.31/1,000 hospital days**

❖ Canadian hospitals Health *Q 2004; 7(4): 25-7*

- IHF rate among 65+ years has been reported to vary from **0.8 to 1.3 / 1,000 admissions**

Clinical outcomes

- ❖ Mean length of stay was **84.9 ±55.8 days**
- ❖ Mean length of stay post IHF was 60.4 ±58.8 days
- ❖ Only **43 %** were discharged back to the original residence after an IHF
- ❖ 27% were discharged to care home (26 new care home discharges)
- ❖ **30 %** died as an inpatient
- ❖ One-year mortality was 54% (n=64/118)

Key learning points!

- ❖ Falls were more common prior to discharge
- ❖ Patients with dementia are at highest risk of falls
- ❖ Half of the patients sustained hip fracture following first inpatient fall, therefore we must prevent first IF
- ❖ Mortality and need for care home placement are much higher after IHF than following community hip fracture

Conclusion

- ❖ **Several factors** such as Ageing, public perception, patient choices, work force, advantages and episodes of serious harm will continue to influence the shape of future hospitals
- ❖ Most people who suffer a hip fracture in hospital have already demonstrated the **clinical need** for attention to falls risk management
- ❖ **Our study on IHF supports planned focus of NAIF to audit Inpatient Hip Fractures**

Acknowledgements

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and Senior Nurses

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sub-group