





### "Adherence to therapy, one of the biggest challenges in the field of Osteoporosis"





- Prof Dr Willem F Lems, February 16th, 2023.
- Amsterdam University medical centre, location VUmc and Reade
- Department of Rheumatology, (EULAR Center of Excellence),
- Amsterdam, the Netherlands

### Why monitoring matters?



- Suboptimal adherence in osteoporotic patients with oral bisphosphonates;
- Suboptimal adherence in osteoporotic patients with parenteral drugs;
- Reasons/mechanisms for non-adherence;
- Effects of BMD measurement and of Bone Turnover Markers on adherence;
- Some experiments with positive effects on adherence.

# Approximately 30% of patients in NL stop taking their osteoporotic tablets within three months after start !



Review > Expert Opin Pharmacother. 2009 Oct;10(14):2303-15.

doi: 10.1517/14656560903140533.

#### Poor adherence to oral bisphosphonate treatment and its consequences: a review of the evidence

Véronique Rabenda <sup>1</sup>, Michaël Hiligsmann, Jean-Yves Reginster



Osteoporos Int (2012) 23:213-221 DOI 10.1007/s00198-011-1796-6

ORIGINAL ARTICLE

#### A reappraisal of generic bisphosphonates in osteoporosis

J. A. Kanis • J.-Y. Reginster • J.-M. Kaufman • J.-D. Ringe • J. D. Adachi • M. Hiligsmann • R. Rizzoli • C. Cooper

Fig. 3 Kaplan–Meier curves for the risk of early discontinuation during the year following index date (first dispensation of bisphosphonate) [48] with kind permission from Springer Science + Business Media BV



#### RESEARCH ARTICLE



#### Compliance and persistence with oral bisphosphonates for the treatment of osteoporosis in female patients with rheumatoid arthritis

Ji-Heh Park<sup>1</sup>, Eun-Kyoung Park<sup>1</sup>, Dong-Wan Koo<sup>2</sup>, Shinwon Lee<sup>3</sup>, Sun-Hee Lee<sup>3</sup>, Geun-Tae Kim<sup>4</sup> and Seung-Geun Lee1



BMC Musculoskeletal Disorders

Open access

Research

**BMJ Open** Real-world persistence and adherence with oral bisphosphonates for osteoporosis: a systematic review

F Fatoye, P Smith, T Gebrye, G Yeowell

- Review based on 89 observational studies from 15 different countries;
- Calculation of persistance and adherence were heterogeneous, so no meta-analysis was possible;

Period with Persistance of Oral Bisphosphonates	Percentages Persistance in Different Studies
- 6 months	34.8% to 71.3%
- 12 months	17.7% to 74.8%
- 24 months	12.9% to 72%
- 36-60 months	No data presented

Osteoporos Int (2012) 23:223–231 DOI 10.1007/s00198-011-1535-z

ORIGINAL ARTICLE

GRAND: the German retrospective cohort analysis on compliance and persistence and the associated risk of fractures in osteoporotic women treated with oral bisphosphonates

P. Hadji · V. Claus · V. Ziller · M. Intorcia · K. Kostev ·



Fig. 4 Kaplan–Meier analysis of compliant vs. non-compliant patients excluding from the analysis of treatment outcome all fractures up to 6 months after initiation of therapy

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#### RESEARCH ARTICLE

Adherence to anti-osteoporosis medication associated with lower mortality following hip fracture in older adults: a nationwide propensity score-matched cohort study

Shan-Fu Yu<sup>1,2</sup>, Jur-Shan Cheng<sup>3</sup>, Ying-Chou Chen<sup>1,2</sup>, Jia-Feng Chen<sup>1,2</sup>, Chung-Yuan Hsu<sup>1,2</sup>, Han-Ming Lai<sup>1,2</sup>, Chi-Hua Ko<sup>1,2</sup>, Wen-Chan Chiu<sup>1,2</sup>, Yu-Jih Su<sup>1,2</sup> and Tien-Tsai Cheng<sup>1,2\*</sup>



### **Adherence after MI**



Poor adherence is a problem for other long-term drugs for prevention as well.

Figure. 1. Use of medication within 30 days after discharge in patients with myocardial infarction. ACE = angiotensin-converting enzyme; ARBs = angiotensin receptor blockers; BBs = beta-blockers; DAPT = dual antiplatelet therapy; LLDs = lipid-lowering drugs.



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Osteoporos Int (2017) 28:1355-1363 DOI 10.1007/s00198-016-3886-y

ORIGINAL ARTICLE

Frequency of discontinuation of injectable osteoporosis therapies in US patients over 2 years

A. Modi<sup>1</sup> · S. Sajjan<sup>1</sup> · R. Insinga<sup>1</sup> · J. Weaver<sup>1</sup> · E. M. Lewiecki<sup>2</sup> · S. T. Harris<sup>3</sup>



1361

#### Osteoporos Int (2017) 28:1355-1363

Fig. 3 Proportion of patients remaining on the prescribed injectable osteoporosis therapy. Data was obtained from Kaplan– Meier survival analyses, where survival was equivalent to remaining on the prescribed therapy



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Osteoporosis International (2020) 31:2093–2102 https://doi.org/10.1007/s00198-020-05507-9

REVIEW



Persistence and adherence to parenteral osteoporosis therapies: a systematic review



G. Koller<sup>1</sup> · V. Goetz<sup>1</sup> · B. Vandermeer<sup>2</sup> · J. Homik<sup>1</sup> · F. A. McAlister<sup>3</sup> · D. Kendler<sup>4</sup> · C. Ye<sup>1</sup>

Study	а	Proportion (95% CI)	Study	с	Proportion (95% CI)	Study	е	Proportion (95% CI)
Yu 2013		0.81 (0.80, 0.82)				Ziller 2012		0.65 (0.65, 0.66)
Ziller 2013	•	0.54 (0.53, 0.55)				Liner 2012		0.00 (0.00, 0.00)
Hazel-Fernandez 2014		0.21 (0.18, 0.24)	Ziller 2013	•	0.63 (0.62, 0.54)	Lakatos 2016		0.61 (0.60, 0.62)
Bonafede 2016		0.49 (0.48, 0.50)	Mar 2016		0.49.49.49.0.49	Hadji 2016	•	0.40 (0.38, 0.41)
Cheng 2016	1	0.52 (0.47, 0.57)	Modi 2015	-	0.42 (0.40, 0.43)	Tremblay 2016		0.73 (0.72, 0.74)
Elasat 2016		U.83 (U.44, U.97)	Durden 2018		0.21 (0.16, 0.28)	Madi 2017		0.44.0.20.0.420
Chan 2017	•	0.34 (0.33, 0.35)				Modi 2017	•	0.41 (0.38, 0.43)
Durden 2018	-	0.54 (0.51, 0.57)	Overall (I*2 = 99.20%, p = 0.00)	$\frown$	0.39 (0.29, 0.50)	Durden 2017 ·		0.34 (0.33, 0.35)
Keshishian 2018		0.49 (0.43, 0.54)		~		Overall (1 <sup>2</sup> = 99.83%, p = 0.00)	$\langle \rangle$	0.52 (0.40, 0.65)
Overal (I <sup>2</sup> = 99.67%, p = 0.00)	<>	0.51 (0.39, 0.62)					<u> </u>	,
0	25 .5 .75	1	0 .25	.5	.75 1	0 .25	.5 .75	5 1
Study	b	Proportion (95% CI)		d			f	
Arden 2006 Landfeldt 2011 Foster 2011 Yu 2012 Ziller 2012 Xu 2013	+ : ÷	→ 0.87 (0.85, 0.89) 0.70 (0.66, 0.74) 0.57 (0.55, 0.59) 0.69 (0.67, 0.70) 0.55 (0.53, 0.56) 0.32 (0.27, 0.36)	Study		Proportion (95% CI)	Study Silverman 2015 Hadji 2015 Eukes 2015		Proportion (95% Cl) 0.82 (0.79, 0.85) 0.92 (0.90, 0.93) 0.77 (0.76 0.77)
Arden 2006 Landfeldt 2011 Foster 2011 Yu 2012 Ziller 2012 Xu 2013 Hansen 2013	+ :		Study		Proportion (95% CI)	Study Silverman 2015 Hadji 2015 Fuksa 2015 Karlsson 2015		Proportion (95% Cl) 0.82 (0.79, 0.85) • 0.92 (0.90, 0.93) 0.77 (0.76, 0.77) • 0.83 (0.81, 0.84)
Arden 2006 Landfeldt 2011 Foster 2011 Yu 2012 Ziller 2012 Xu 2013 Hansen 2013 Hansen 2013 Hadi 2013	+ : · · ·		Study Ziller 2012	•	Proportion (95% CI) 0.57 (0.56, 0.57)	Study Silverman 2015 Hadji 2015 Fuksa 2015 Karlsson 2015 Cheng 2015		Proportion (95% Cl) 0.82 (0.79, 0.85) • 0.92 (0.90, 0.93) 0.77 (0.76, 0.77) • 0.83 (0.81, 0.84) 0.68 (0.66, 0.71)
Arden 2006 Landfeldt 2011 Foster 2011 Yu 2012 Ziller 2012 Xu 2013 Hansen 2013 Hacel-Fernandiez 2013 Hadj 2013 Balasubramanian 2013	<del>.</del> . 		Study Ziller 2012 Xu 2013 •	•	Proportion (95% CI) 0.57 (0.56, 0.57) 0.33 (0.32, 0.34)	Study Silverman 2015 Hadji 2015 Fuksa 2015 Karlsson 2015 Cheng 2015 Lakatos 2016		Proportion (95% Cl) 0.82 (0.79, 0.85) • 0.92 (0.90, 0.93) 0.77 (0.76, 0.77) 0.83 (0.81, 0.84) 0.68 (0.66, 0.71) 0.81 (0.79, 0.83)
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Arden 2006 Landfelct 2011 Foster 2011 Yu 2012 Ziller 2012 Xu 2013 Hansen 2013 Hacel-Fernandez 2013 Hadj 2013 Balasubramanian 2013 Rejbaum 2014 Carbonel-Abella 2015 Thorsteinsson 2015 Burge 2016			Study Ziller 2012 Xu 2013 • Lakatos 2016 Hadji 2016		Proportion (95% CI) 0.57 (0.56, 0.57) 0.33 (0.32, 0.34) 0.58 (0.57, 0.59) 0.43 (0.42, 0.44)	Study Silverman 2015 Hadji 2015 Fuksa 2015 Karlsson 2015 Cheng 2015 Lakatos 2016 Tremblay 2016 Modi 2017 Durden 2017	- 	Proportion (95% Cl) 0.82 (0.79, 0.85) 0.92 (0.90, 0.93) 0.77 (0.76, 0.77) 0.83 (0.81, 0.84) 0.68 (0.66, 0.71) 0.81 (0.79, 0.83) 0.82 (0.81, 0.83) 0.61 (0.57, 0.65) 0.70 (0.69, 0.72)
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**Fig. 2** Forest plots summarizing **a** teriparatide 12-month adherence, **b** teriparatide 12-month persistence, **c** ibandronate 12-month adherence, **d** ibandronate 12-month persistence, **e** zoledronic acid 2nd dose persistence, and **f** denosumab 2nd dose persistence

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# Reasons for non-adherence are numerous and multidimensional

NSUS STATEMENT	
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Ausculoskeletal Diseases (ESCEO) and the International	
porosis Foundation (IOF)	

ttps://doi.org/10.1007/s00198-019-0510

and

Hillgsmann<sup>1</sup> · D. Cornelissen<sup>1</sup> · B. Vrijens<sup>2</sup> · B. Abrahamsen<sup>2,4,5</sup> · N. Al-Dagha<sup>6</sup> · E. Biver<sup>7</sup> · M.L. Brandl<sup>8</sup> · Bruyer<sup>6</sup> · N. Burtel<sup>8</sup> · C. Corosso<sup>1</sup> · J. Horosso<sup>1</sup> · A. J. Brosso<sup>1</sup> · A. J. K. Brosso<sup>1</sup> · A. J. Brosso<sup>1</sup> · B. J. Brosso<sup>1</sup> · A. J. B

- Patient-related: misconception about osteoporosis ("traumatic fracture", lack of insight in high risk for future fractures), fear for side-effects, preferring healthy life style above drugs;
- Physician related: also misconception about osteoporosis (!), too busy with other items;
- Therapy related: side-effects, complex intake regimens (daily versus oral bisphosphonates);
- Condition-related: polypharmacy, upper GI-diseases and GI-complaints;
- Health-system related: costs, but also care under different specialties (hospital specialist and general practitioner)

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#### The Average Response to Risedronate 5 mg Exceeds LSC Earlier for BTMs (3 Months) than BMD (18 Months)

#### Spine BMD (% $\triangle$ from baseline)



Time (months)

#### NTX (% $\triangle$ from baseline)



Time (months)



LSC = least significant change.

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Can the Bone Turnover Markers P1NP and CTX be used to identify low adherence in oral bisphosphonate users?

### EFFECT OF BPS ON SERUM CTX

#### EFFECT OF BPS ON SERUM P1NP





#### ALGORITHM FOR ADHERENCE SCREENING



#### ALGORITHM FOR ADHERENCE SCREENING



#### IF BTM DO NOT DECREASE...



Lack of efficacy







#### **BY TOPICS**







#### **BY TOPICS**





The Impact of Monitoring on Adherence and Persistence with Antiresorptive Treatment for Postmenopausal Osteoporosis: A Randomized Controlled Trial

JACKIE A. CLOWES, NICOLA F. A. PEEL, AND RICHARD EASTELL Bone Metabolism Group, University of Sheffield, Sheffield, United Kingdom S57 AU



#### Effect of Monitoring Bone Turnover Markers on Persistence with Risedronate Treatment of Postmenopausal Osteoporosis

Pierre D. Delmas, Bernard Vrijens, Richard Eastell, Christian Roux, Huibert A. P. Pols, Johann D. Ringe, Andreas Grauer, David Cahall, and Nelson B. Watts, on behalf of the Improving Measurements of Persistence on Actonel Treatment (IMPACT) Investigators\*



The Journal of Clinical Endocrinology & Metabolism 92(4):1296-1304

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Fig. 1 Persistence with teriparatide according to the different support programs



Osteoporosis International (2019) 30:1837–1844 https://doi.org/10.1007/s00198-019-05052-0

ORIGINAL ARTICLE



Two-year persistence with teriparatide improved significantly after introduction of an educational and motivational support program

M.A. van Maren<sup>1</sup> • C.E. Wyers<sup>1,2,3</sup> • J.H.M. Driessen<sup>3,4,5</sup> • J.V. Visser<sup>6</sup> • F. de Vries<sup>4,5</sup> • K. van de Wijdeven<sup>6</sup> • S. Gevers<sup>6</sup> • W.F. Lems<sup>7</sup> • M.H. Emmelot-Vonk<sup>8</sup> • J.P.W. van den Bergh<sup>1,2,3,9</sup>

Osteoporosis International (2022) 33:263–272 https://doi.org/10.1007/s00198-021-06102-2

**ORIGINAL ARTICLE** 

Check for updates



Ewald Boschitsch<sup>1,2</sup> · Oliver Naegele<sup>2</sup> · Anita Klinger<sup>1,2</sup> · Harald Brix-Samoylenko<sup>1</sup>







Osteoporosis International (2022) 33:263-272 https://doi.org/10.1007/s00198-021-06102-2

**ORIGINAL ARTICLE** 

Check for updates

Long-term persistence with denosumab: real-world data from the Austrian Osteoporosis Clinic (AOC). A retrospective data analysis

Ewald Boschitsch<sup>1,2</sup> · Oliver Naegele<sup>2</sup> · Anita Klinger<sup>1,2</sup> · Harald Brix-Samoylenko<sup>1</sup>









#### 268

Fig. 3 Mean values of BMD

at the hip (±95% confidence



Observational Study > Osteoporos Int. 2014 Feb;25(2):701-9. doi: 10.1007/s00198-013-2481-8.

Epub 2013 Sep 13.

### Optimizing fracture prevention: the fracture liaison service, an observational study

D A Eekman <sup>1</sup>, S H van Helden, A M Huisman, H J J Verhaar, I E M Bultink, P P Geusens, P Lips, W F Lems

visit the clinic. In 337 responding patients, osteoporosis was diagnosed and treatment was initiated. After 12 months of follow-up, 88 % of the patients were still persistent with anti-osteoporosis therapy and only 2 % suffered a subsequent clinical fracture.

> Osteoporos Int. 2011 Jul;22(7):2099-106. doi: 10.1007/s00198-011-1638-6. Epub 2011 Apr 29.

Management of osteoporosis in fracture liaison service associated with long-term adherence to treatment

L Boudou <sup>1</sup>, B Gerbay, F Chopin, E Ollagnier, P Collet, T Thomas

**Results:** Of the 279 selected patients, 155 were evaluated. Of them, 90.3% had actually started their treatment and 80% were still under treatment after 1 year. After 27.4 ± 11.7 months of follow-up, 67.7% of patients were persistent with their treatment. In addition, 87% of the persistent patients







- Adherence to drug treatment is a serious topic in osteoporotic patients; adherence of around only 50% after 1 year is often observed;
- For parenteral osteoporotic drugs, adherence is around 50% after 2 years;
- Clearly, a low adherence of around 50% after 1 year has a negative effect on fracture reduction (often intentional 3-5 years treatment);
- There are many reasons for low adherence (patient-related, physician related, drug-related, system related);



- Monitoring by bone turnover markers might be helpful in improving adherence: by finding a decrease in bone turnover above the treshold, it might reinforce patients already after 3 months that the therapy is effective.
- On the other hand, it may help to early detect ineffectiveness, due to lack of adherence or other reasons;
- NB monitoring by regularly contacts with nurse might also be helpful;





- Promising experiments:
- Both 1) Educational and Motivational programmes and 2) intensive follow-up with bone turnover markers and DXA have been shown to show favorable results;
- Adherence after 1 year of up to 90% (!) have been found in FLS, probably because of fear of another fracture and because of selection of patients who accept the invitation to vist FLS.
- Can in the Real-World, the Fracture Liaison Service be a helpful instrument in improving adherence?





- Thank you for your attention.
- Questions?



Email: <u>wf.lems@amsterdamumc.nl</u>.

### Part 2: Challenges to monitoring in the FLS setting

- M Kassim Javaid Academic Rheumatologist, University of Oxford
- Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences (NDORMS), University of Oxford





### Disclosures

- In the last three years, Dr Javaid has received honoraria, unrestricted research grants, travel and/or subsistence expenses from:
- Amgen, Kyowa Kirin, UCB, Besin Healthcare, Sanofi, Abbvie
- Clinical lead for the Royal College of Physicians FLSDB audit
- Co-chair for the International Osteoporosis Foundation Capture the Fracture group

# Overview

- Why monitoring is important
- Current monitoring
- Monitoring in FLS setting
- Challenges from FLS Perspective
  - 1. Environment
  - 2. Awareness
  - 3. Capability
  - 4. Capacity
  - 5. Local FLS delivery

Osteoporosis International (2019) 30:2155–2165 https://doi.org/10.1007/s00198-019-05104-5

CONSENSUS STATEMENT



Determinants, consequences and potential solutions to poor adherence to anti-osteoporosis treatment: results of an expert group meeting organized by the European Society for Clinical and Economic Aspects of Osteoporosis, Osteoarthritis and Musculoskeletal Diseases (ESCEO) and the International Osteoporosis Foundation (IOF)

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Received: 13 June 2019 / Accepted: 18 July 2019 / Published online: 7 August 2019 ① The Author(s) 2019

### What is a Fracture Liaison Service/ FLS?



Small group of doctors nurses, administrators and other healthcare professionals

Follow templated pathways

High volume/ low complexity Suitable for 80 to 90% of patients

Leave complex patients for bone specialist

### Fracture Liaison Service (FLS) pathway: what is monitoring



Monitoring at 16 and 52 weeks

Check patient started recommended treatment Reinforce motivation Check if needs to switch or stop Following administration Following frequency of dosing Tolerability / Unwanted effects Emergent cautions Change in fracture risk

### Why Monitoring is even more important for FLS?





**Our** Aim

All patients aged 50 years and over with a recently diagnosed fragility fracture effectively managed for bone and falls health

avoided				50%		Quickly	000/	Treatment
Optimal Number of fractures	=	No of patients identified	x	% Recommended	x	% Starting treatment	x	% Staying on

Cases	Spine	Assessment within	DXA within	Falls risk	Bone	Strength & Balance	16 week	Treatment by 1st	1 year drug
identified	fractures	90 days	90 days	assessment	treatment	by 16 weeks	follow up	followup	adhereance
				2			2		

# Why 80 / 50 / 80 matters

N= 78	2021 (n=73 <i>,</i> 615)	2023 "80/ 50 / 80"
Identification	39.1%	80%
Treatment	55.8%	50%
Monitoring	18.8%	80%
Number of patients on treatment at 12 months	3,020	23,557 (x7.8 fold)

https://www.fffap.org.uk/FLS/charts.nsf/Benchmarks?ReadForm&yr=2021&vw=BALL&org1=

# Challenge 1: Environment: Fracture patient journey



Volatile – big changes in patient numbers, staffing, hospital systems, primary care activity
Uncertainty – not predictable
Complex – many factors are involved
Ambiguity – never know all the information



# Challenge 2: awareness

Not every FLS is automatically effective





Not every FLS is *optimally* effective and efficient

How would you know?

Is **your** proposed or current FLS is optimally effective and efficient?

Effective at organisational level?

Effective at patient level?

### BEST PRACTICE FRAMEWORK

HEALTH CARE QUALITY

#### AIM:

- 1. Set the standard for FLS (13 criteria)
- 2. Guidance
- 3. Benchmarking and Quality improvement
- > Available in 15 different languages

Arabic
Chinese (traditional)
Chinese (simplified)
English
French
German
Hebrew
Italian
Japanese
Russian
Slovak
Spanish
Polish
Portuguese
Thai
Download -

- **1.** Patient Identification 2. Patient Evaluation **3. Post Fracture Assessment Timing** 4. Vertebral Fracture (VF) ID 5. Assessment Guidelines 6. Secondary Causes of OP 7. Falls Prevention Services 8. Multifaceted Assessment 9. Medication Initiation **10. Medication Review 11. Communication Strategy 12. Long-term Management** 
  - 13. Database

Download the Best Practice Framework and learn about the 13 globallyendorsed standards



Akesson OI 2013

12.	STANDARD	LEVEL 1	LEVEL 2	LEVEL 3
Long-term Management	Institution has a protocol in place for long-term follow up of evidence-based initial interventions and a long term adherence plan.	Treatment recommendations, for patients requiring drug treatments, include a long-term follow-up plan that occurs >12 months after fracture advising when the patient should undergo future reassessment of fracture risk and of need for treatment.		Treatment recommendations, for patients requiring drug treatments, include both a short-term follow-up plan <12 months after fracture, AND a long-term follow-up plan >12 after fracture, advising when the patient should undergo future reassessment of fracture risk, the need for treatment and clear guidance on when and with whom lies responsibility for monitoring adherence to treatment.
Guidance notes/rationale	The intention of this standard is to ascertain what processes are in place to ensure that long-term management of fracture risk is reliably provided. In healthcare systems with established primary care infrastructure, local primary care must be involved in developing the processes that they will implement for this aspect of post-fracture care. In healthcare systems that lack primary care infrastructure, the FLS must establish effective feedback processes directly from the patient or carer and devise strategies to ensure follow-up by the FLS.	Institution can demonstrate the proportion of patients originally assessed by the FLS have a long- term follow-up plan in place that has been subject at years 1 & 2 and beyond.		Institution can demonstrate the proportion of patients originally assessed by the FLS have a short- term follow-up plan within 6-12 months, as well as a long term management plan in place that has been subject at years 1 & 2 and beyond.

Footnote: A key responsibility of an FLS of care is to have a *protocol in place* to ensure long-term follow-up will take place, and clear guidance on when and with whom lies the responsibility for monitoring adherence to treatment whether it be by the FLS, referred to the primary care physician/provider, or by another means that suits the underlying health care system.

#### **Best Practice Framework Questionnaire**



Overview and language selection	
About the Hospital	
User Information	
Lead Clinician	
FLS Coordinator	
About the FLS Staff	
About FLS Patient Identification	
About Post-Fracture Assessment and/or	
Treatment for Prevention of Secondary Fractures	
Standard 1: Patient Identification	
Standard 2: Patient Evaluation	
Standard 3: Post-fracture Assessment Timin	g
Standard 4: Vertebral Fracture	
Standard 5: Assessment Guidelines	
Standard 6: Secondary Causes of Osteoporosis	•
Standard 7: Falls Prevention Service	•
Standard 8: Multifaceted Health & Lifestyle Risk-Factor Assessment	•
Standard 9: Medication Initiation Standard	
Standard 10: Medication Review	
Standard 11: Communication Strategy	
Standard 12: Long-Term Management	
Standard 13: Database	
Comments	

### **ABOUT BEST PRACTICES**

The following questions are about the FLS and its success against the Capture the Fracture® Best Practice Framework. The Best Practice Framework is available at <u>www.capturethefracture.org/best-practice-framework</u>.

#### Standard 12: Long-Term Management

- **S1.** Is there a management plan for secondary fracture prevention in place to re-evaluate fracture risk and adherence to osteoporosis treatment in those recommended for treatment?
- YesNo



What does the re-evaluation include?

Please select all that apply:

□ Medication adherence

- Medication unwanted effects
- Re-fracture check
- Change in fracture risk factors
- Recurrent falls
- Other, please specify:

fracture prevention include proposed duration of treatme

#### **S3.** Which patients undergo re-evaluation by your service?

Please select all that apply:

- □ Hip fracture inpatients
- □ Non-hip outpatient fragility fractures
- Non-hip, non-vertebral inpatients
- Clinical vertebral fractures
- Radiological vertebral fractures

**S4.** At which times are patients reevaluated after recommendation to start treatment?

- Please select all that apply:
- < < 6 months
- 7-12 months
- □ 13-24 months
- $\square$  > 25 months

**S5.** Do you time patient re-evaluation from:

The date of the index fracture
The date treatment is recommended
Other, please specify:

<b>S6</b> .	In what manner are patients monitored?	Please select all that apply:
		Prescription review
		Telephone interview
		Postal questionnaire
		Clinic review
		DXA-VFA
		🗆 Other, please specify:
<b>S7</b> .	Who is responsible for the long-term management of the patients?	Please select all that apply:
		□ FLS coordinator
		Non-clinical specialist practitioner
		Clinician – speciality
		Primary care physician
		Other, please specify:
		fracture prevention includes refe
<b>S8</b> .	Comments:	

### FLS REVIEW AT ORGANISATIONAL LEVEL

Standards of care	Hips	Other Inpatients	Outpatients	Spine fracture
1. Patient Identification	Yes	Yes	Yes	No
2. Patient Evaluation	Yes	Yes	Yes	No
6. Secondary Causes of OP	Yes	Yes	Yes	No
7. Falls Prevention Services	Yes	Yes	No	No
9. Medication Initiation	Yes	Yes	No	No
10. Medication Review	Yes	Yes	Yes	No
11. Communication Strategy	Yes	Yes	No	No
12. Long-Term Management	No	No	No	No
13. Database	Yes	No	No	No

11 Key performance indicators (KPI) to track patient journey > find the gaps



Patient level FLS Snapshot		N	ly current PFC	C/ FLS is: Oxford	ł
Approximately how many patients did your service identify in last 12 months=			2400 patie	nts	
Index fragility fracture site:	Нір	Other inpatient	Trauma outpatients	Clinical Spine	Radiological Spine
1. Proportion of patients identified by FLS (>80%, 50-79%, <50%, No, DK)					
<ol> <li>Time from fracture diagnosis to start FLS assessment (&lt;12wks, &gt;12wks, DK, NA)</li> </ol>					
3. Time from fracture diagnosis to DXA scan (<12wks, >12wks, DK, NA)					
4. Falls Assessment by local guidelines (By FLS, By other, No)					
5. Recommended anti-osteoporosis medication (>50%, <50%, DK NA)					
6. Started AOM by 16 weeks from fracture (>80%, 50-79%, <50%, No, DK)					
7. On AOM at 52 weeks from fracture (>80%, 50-79%, <50%, No, DK					
8. Database (national, local, none)					
9. Service improvement cycle completed in last 12 months (yes / no)					

#### AOM – anti-osteoporosis medication

Patient level FLS Snapshot	My current PFC/ FLS is: Oxford								
Approximately how many patients did your service identify in last 12 months=	2400 patients								
Index fragility fracture site:	Нір	Other inpatient	Trauma outpatients	Clinical Spine	Radiological Spine				
1. Proportion of patients identified by FLS (>80%, 50-79%, <50%, No, DK)	>80%	50-79	>80	<50%	DK				
<ol> <li>Time from fracture diagnosis to start FLS assessment (&lt;12wks, &gt;12wks, DK, NA)</li> </ol>	< 12	< 12	> 12	>12	x				
3. Time from fracture diagnosis to DXA scan (<12wks, >12wks, DK, NA)	> 12	>12	<12	< 12	x				
4. Falls Assessment by local guidelines (By FLS, By other, No)	Other	FLS	FLS	No	x				
5. Recommended anti-osteoporosis medication (>50%, <50%, DK NA)	> 50%	>50%	<50%	>50%	x				
6. Started AOM by 16 weeks from fracture (>80%, 50-79%, <50%, No, DK)	< 50%	>80%	<50%	<50%	x				
7. On AOM at 52 weeks from fracture (>80%, 50-79%, <50%, No, DK	DK	50-79	<50	<50	x				
8. Database (national, local, none)	Natio nal	Local	Local	Local	x				
9. Service improvement cycle completed in last 12 months (yes / no)	No	No	Yes	No	No				

#### AOM – anti-osteoporosis medication

# Challenge 3: Capability

# Challenge 3: Capability



Monitoring detail Who When What Consequence

### Quality / Healthcare Improvement



Download the Best Practice Framework and learn about the 13 globallyendorsed standards KPI 1: Non-spine Fractures KPI 2: Spine Fractures KPI 2: Spine Fractures

BEST PRACTICE FRAMEWORK for FRACTURE LIAISON SERVICES

Setting the standard Studies have shown that Fracture Liaison Service models are the most cost-ffective in preventing secondary fractures. This systematic approach, with a fracture coordinator at its centre, can result in fewer fractures, cost savings for the health system and improvement in the quality of life of patients.

www.capturethefracture.org

P

KPI 2: Spine Fractures KPI 2: Spine Fractures KPI 11: Data completeness

12

weeks

KPI 7: Follow up

KPI 8: AOM initiation

KPI 9: Strength/Balance

KPI 10: AOM persistence

initiation

16

weeks

Patient and carer Co-production



# Challenge 4: Capacity

### Under staffed Under supported



See more patients



See fewer patients & Monitor more

# Challenge 4: Capacity

### Under staffed Under supported



Evidence for the impact of implementing QI for patient benefit

# Challenge 4: Capacity

### Under staffed Under supported



Evidence for the impact of implementing QI for patient benefit

NEED TO OPRIMIZE: implementing QI for FLS MODEL FIRST

# England and Wales FLSDB audit:



Figure 2: The number of services providing amber and green grades of performance in 2021 compared with 2019 and 2018.

### Challenge 4: Capacity – Become leaner

See more patients with fewer staff

Fully implemented Digital solutions

a) PATIENT pathway management

b) AI Identification of patients

Deliver Monitoring more efficiently

A) Evidence based DXA inverval

B) Remote assessment

C) Primary care prescription data

D) Clear next steps in pathway

### Challenge 4: Capacity – Become leaner

See more patients with fewer staff

Fully implemented Digital solutions

a) PATIENT pathway management

b) AI Identification of patients

Deliver *Service Improvement* more efficiently

A) SEMI AUTOMATICPatient level dataPerformance charts and tables

B) Digital Resources / Workbooks

# Challenge 4: National patient level databases

#### National FLS database

![](_page_62_Figure_2.jpeg)

2016 vsicians				Frac	ture	Liai	SON S	Serv	cture A	Data udit Program	abas
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Region	Total records submitted	KPI 2 Cases identified	KPI 3 Spine fractures	KPI 4 Assessment within 90 days	KPI 5 DXA within 90 days	KPI 6 Falls risk assessment	KPI 7 Bone treatment	KPI 8 Strength & Balance by 16 weeks	KPI 9 16 week follow up	KPI 10 Treatment by 1st followup	KPI 11 1 year drug adherence
1. National averages A	II 73615	39.1	20.9	66.7	30.6	61	55.8	5.6	24.7	28.5	18.8
2. England	70354	41.2	22.1	67.5	31.4	72.1	55.9	5.8	25.4	29.2	18.9
3. Wales	2034	21.8	11.8	65.2	22.7	62.1	57.1	3.9	13.6	10.2	24
4. Northern Ireland	1094	18	8.2	20.2	17	100	47.3	0	0	27.6	2.1
East Midlands	6334	32.6	7.1	82.4	31.5	30.1	61.9	0	10.5	13.3	0
East of England	7013	34	8.5	75	30.2	69.1	69.2	13.7	34.5	33.3	30.7
London	8160	31.7	23	61.4	33.6	66.7	52.4	12.1	22.7	24.7	16.6
North East	7996	59.5	23	60.2	22.5	71.2	41.6	4.4	13.1	28.7	27.1
North West	3676	23	15.3	52.7	23.8	87.8	39.1	4	7.7	11.1	9
South Central	9341	58.1	34.7	79.5	41.2	92.9	67.6	5	36.8	41.4	11.2
South East	4601	26	10.6	36.4	34.5	80.7	39.7	.7	10.3	19.8	14
South West	12666	61.5	43.9	65.5	37.6	82.6	57.2	4.5	39.3	39.8	25.9
West Midlands	7267	47.3	18.3	78.8	30.9	78.4	57.1	5.9	19.1	25	29.7
Yorkshire and The Humber	3228	55.6	64.3	64.2	10.8	46.5	61.3	2	12.9	13.7	11.1

Home | Public Charts | Benchmarks | Resources | Support

![](_page_62_Figure_5.jpeg)

#### www.fffap.org.uk

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FLS Service/Unit	Unit Code	Total records submitted	KPI 2 Cases identified	KPI 3 Spine fractures	KPI 4 Assessment within 90 days	KPI 5 DXA within 90 days	KPI 6 Falls risk assessment	KPI 7 Bone treatment	Strength & Balance by 16 weeks	KPI 9 16 week follow up	KPI 10 Treatment by 1st followup	KPI 11 1 year drug adherence
Walsall Healthcare	WMH	720	44.7	9.6	32.4	36.3	95.8	33.8	.5	70.4	69.1	75.9
Airedale NHS Foundation Trust	RCF	574	38	19.2	96.9	9.3	98.8	34	1.7	48.2	61.3	72.3
University Hospital Llandough	LLD	544	20.5	3	97.1	33.3	62.4	49.3	0	.4	3.4	64.5
Sunderland Royal Hospital	SUN	941	49.5	37.9	96.6	39.9	80.4	58.2	.4	18.3	43.3	63.1
Bedford Hospital	BED	565	45	36.7	68.5	48.8	70.2	62.7	15.1	19	47.7	57.7
Cambridge University Hospitals NHS Foundation Trust FLS	ADD	1660	73.3	7.3	94.1	37	91.9	67.5	18.1	67.8	46.8	55.2
The Haywood Hospital Burslem Stoke on Trent	HAY	1354	37.4	41	54.9	47.2	92.4	46.4	1.1	39.7	42.9	54.5
The Hillingdon Hospitals NHS Foundation Trust	HIL	408	36.8	13.5	86.8	2.8	100	36	50	49.6	45.4	52
Barnet Hospital	BNT	494	26.6	19.4	82	56.4	91.6	51.8	2.1	64	45.2	50.9
Dorset County Hospital	WDH	1185	76.2	52.1	67.9	44.2	91.1	49.7	12.5	39.6	56.6	48
Poole Hospital NHS Foundation Trust	PGH	1843	38.7	6.1	18.5	20.9	61.2	43.4	7.1	17.1	26	47.6
Yeovil Hospital	YEO	1526	99.7	60.1	85.7	62.7	94.2	65.3	.3	83.2	66.4	46.3
The Ipswich Hospital NHS Trust	IPS	1645	69	10.1	83.2	54	91.5	51.2	14.9	46.9	58.2	45.7

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KPI 8

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![](_page_64_Figure_0.jpeg)

First Followup A - All

• Patients recommended drug therapy who were reviewed within 4 months National % - Patients adherent to prescribed drug at 1yr National %

# Challenge 5: Local delivery of improvement

Take the FLS knowledge, experience, expertise in FLS, Monitoring, Service improvement

![](_page_65_Figure_2.jpeg)

# Challenge 5: Local delivery of improvement

![](_page_66_Figure_1.jpeg)

Mentors support FLSs Get started Get mapped Become more effective

Coaching calls

FLS <> FLS learn from each other

Digital platforms to support local activities

# Objectives

- Challenges
  - 1. Environment –volatile, uncertain, complex, ambiguous
  - 2. Awareness organisational / Patient level
  - 3. Capability monitoring / service improvement
  - 4. Capacity monitor more/ improve / leaner
  - 5. Local FLS delivery regional networks

![](_page_67_Figure_7.jpeg)