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

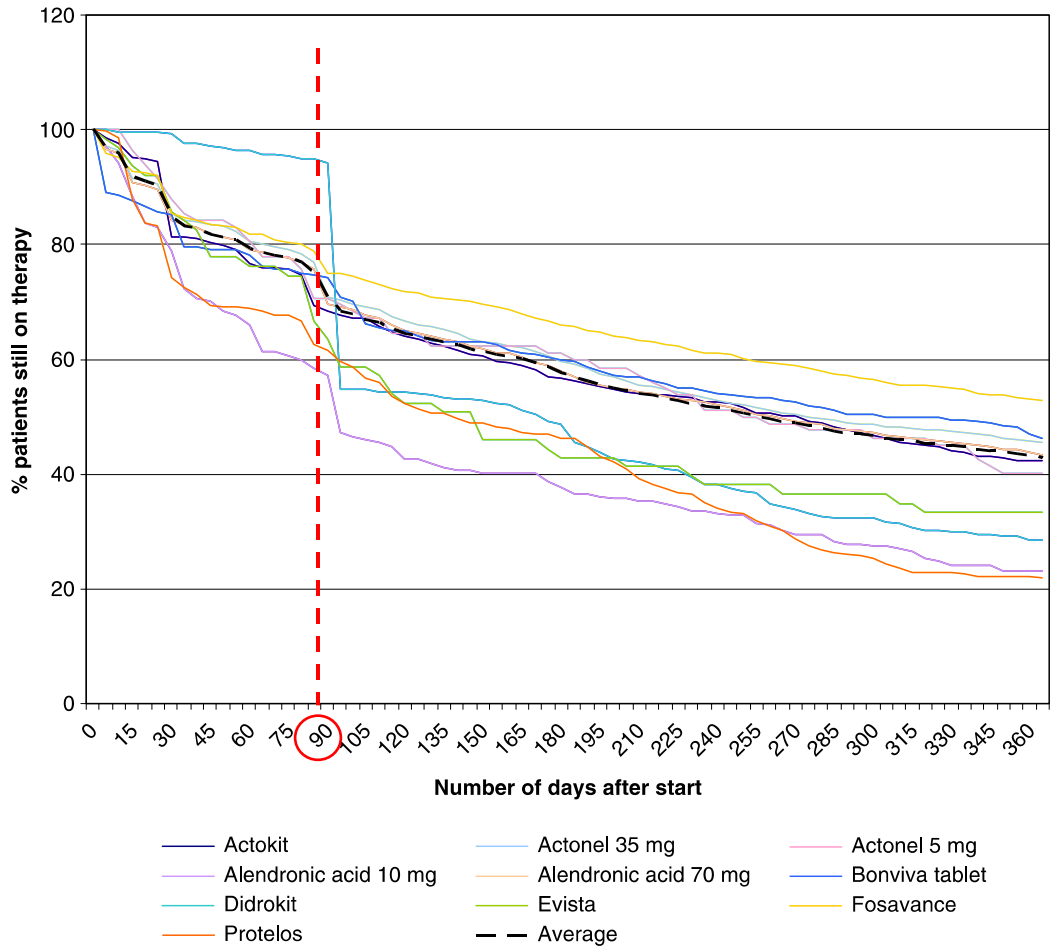
- Prof Dr Willem F Lems, **February 16th, 2023**.
- Amsterdam University medical centre, location VUmc and Reade
- Department of Rheumatology, (EULAR Center of Excellence),
- Amsterdam, the Netherlands

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 !

Fig. 3 12 months' persistence (%) of oral osteoporosis medication



57% of patients stop taking their tablets within one year!

Netelenbos et al. Osteoporos Int 2011; 22: 1537-1546

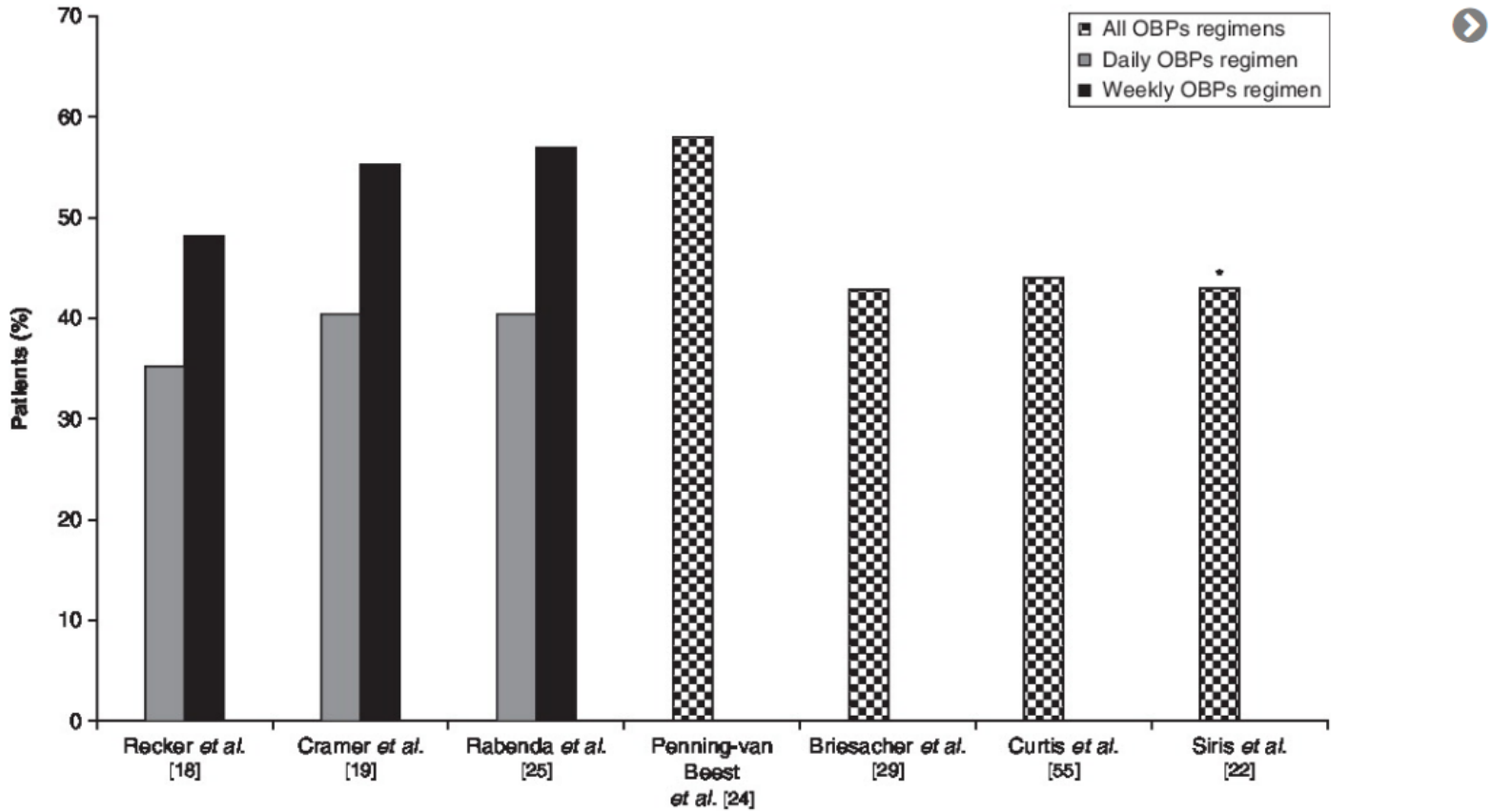
Review > Expert Opin Pharmacother. 2009 Oct;10(14):2303-15.
doi: 10.1517/14656560903140533.

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

Véronique Rabenda [1], Michaël Hiligsmann, Jean-Yves Reginster

Figure 2 of 2

Figure 2. Proportion of patients with adequate compliance (MPR ≥ 80%) at 12 months. *Proportion of patients with adequate compliance (MPR ≥ 80%) at 24 months.MPR: Medication possession ratio; OBP: Oral bisphosphonates.



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

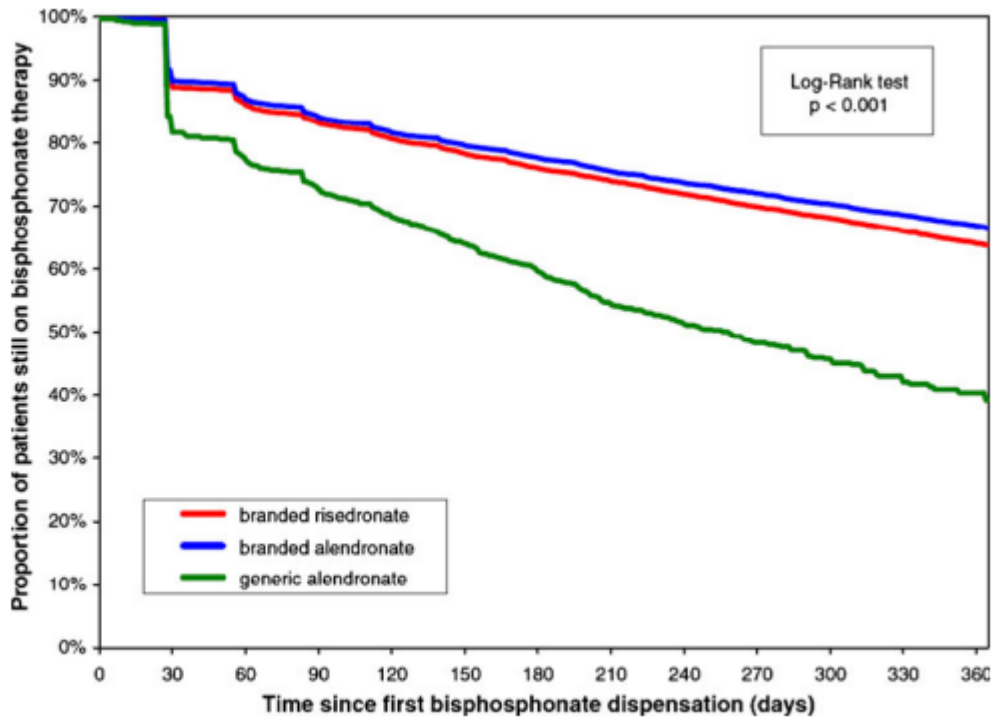
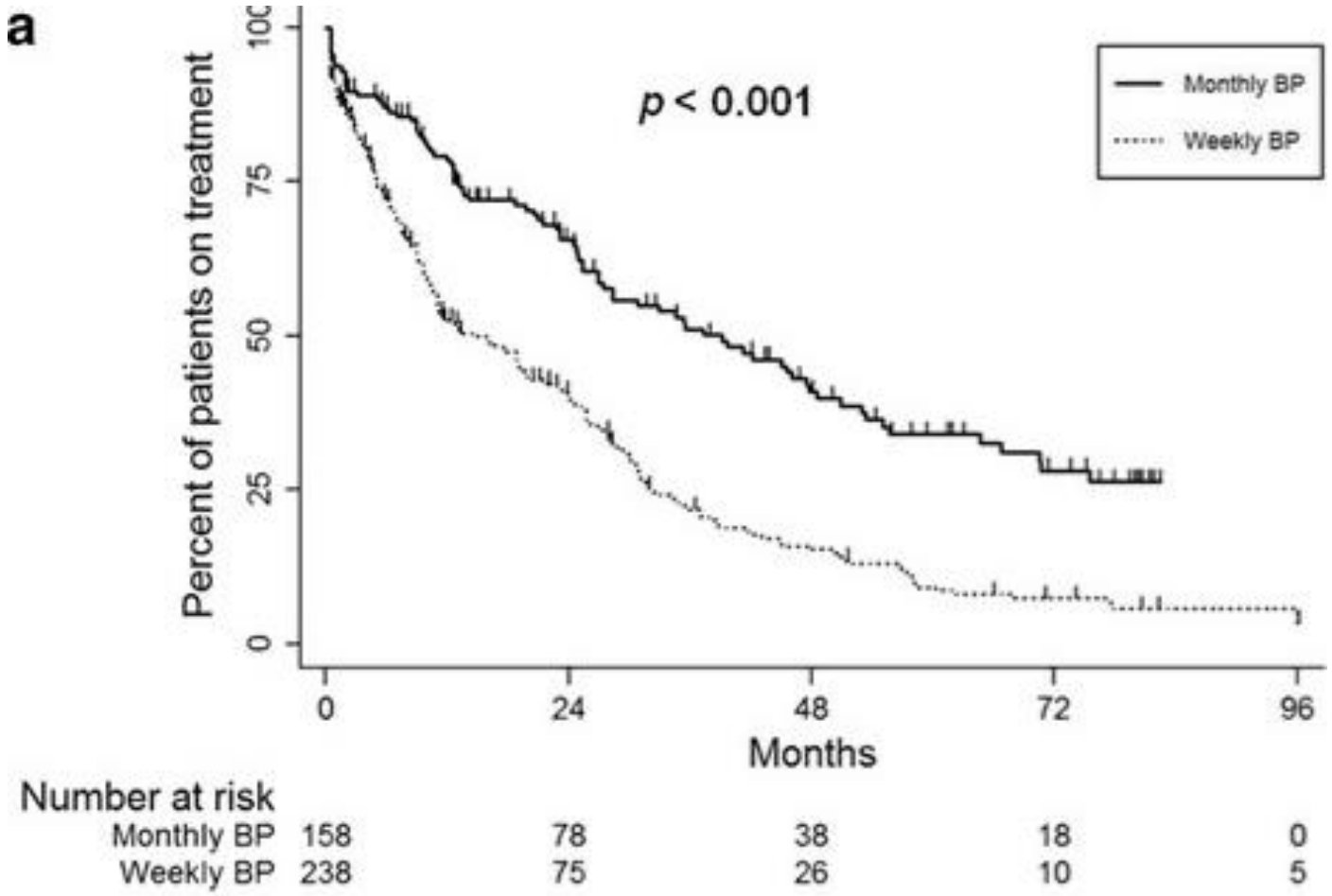


Fig. 3 Kaplan–Meier curves for the risk of early discontinuation during the year following index date (first dispensation of bisphosphonate) [48] with kind permission from Springer Science + Business Media BV

RESEARCH ARTICLE Open Access

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

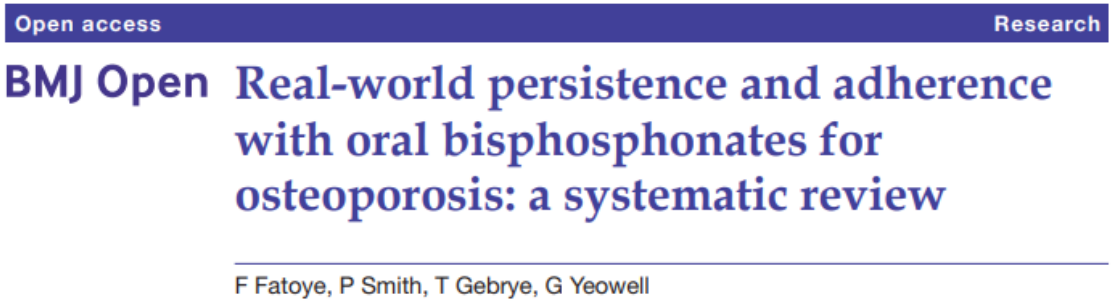
Ji-Heh Park[1], Eun-Kyoung Park[1], Dong-Wan Koo[2], Shinwon Lee[3], Sun-Hee Lee[3], Geun-Tae Kim[4] and Seung-Geun Lee[1*]



BMC Musculoskeletal Disorders

2017

Open access Research



- 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

2019

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 ·

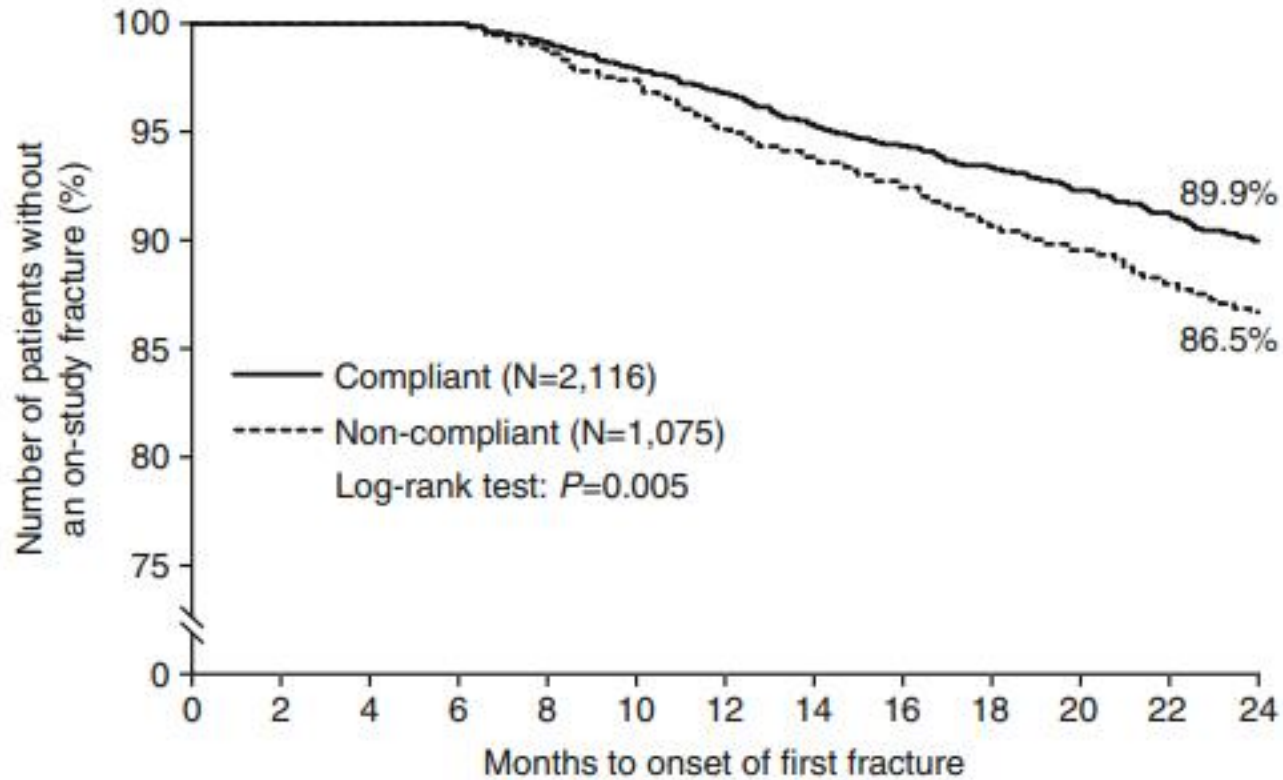


Fig. 4 Kaplan–Meier analysis of compliant vs. non-compliant patients excluding from the analysis of treatment outcome all fractures up to 6 months after initiation of therapy

Yu et al. BMC Geriatrics (2019) 19:290
https://doi.org/10.1186/s12877-019-1278-9

BMC Geriatrics

RESEARCH ARTICLE Open Access

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

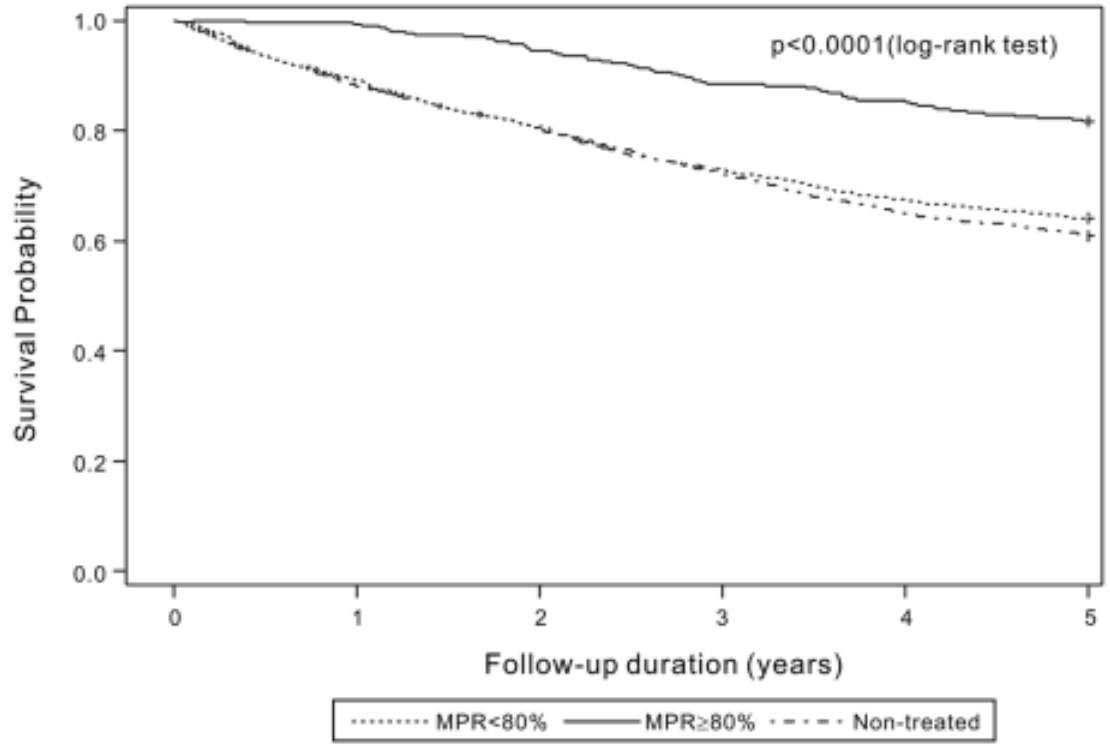


Fig. 3 Kaplan–Meier curve of total mortality showing a comparison between patients with good adherence, non-adherence, and non-treated patients. Patients with good adherence showed the lowest risk of all-cause mortality (log-rank test, $p < 0.001$)

Adherence after MI

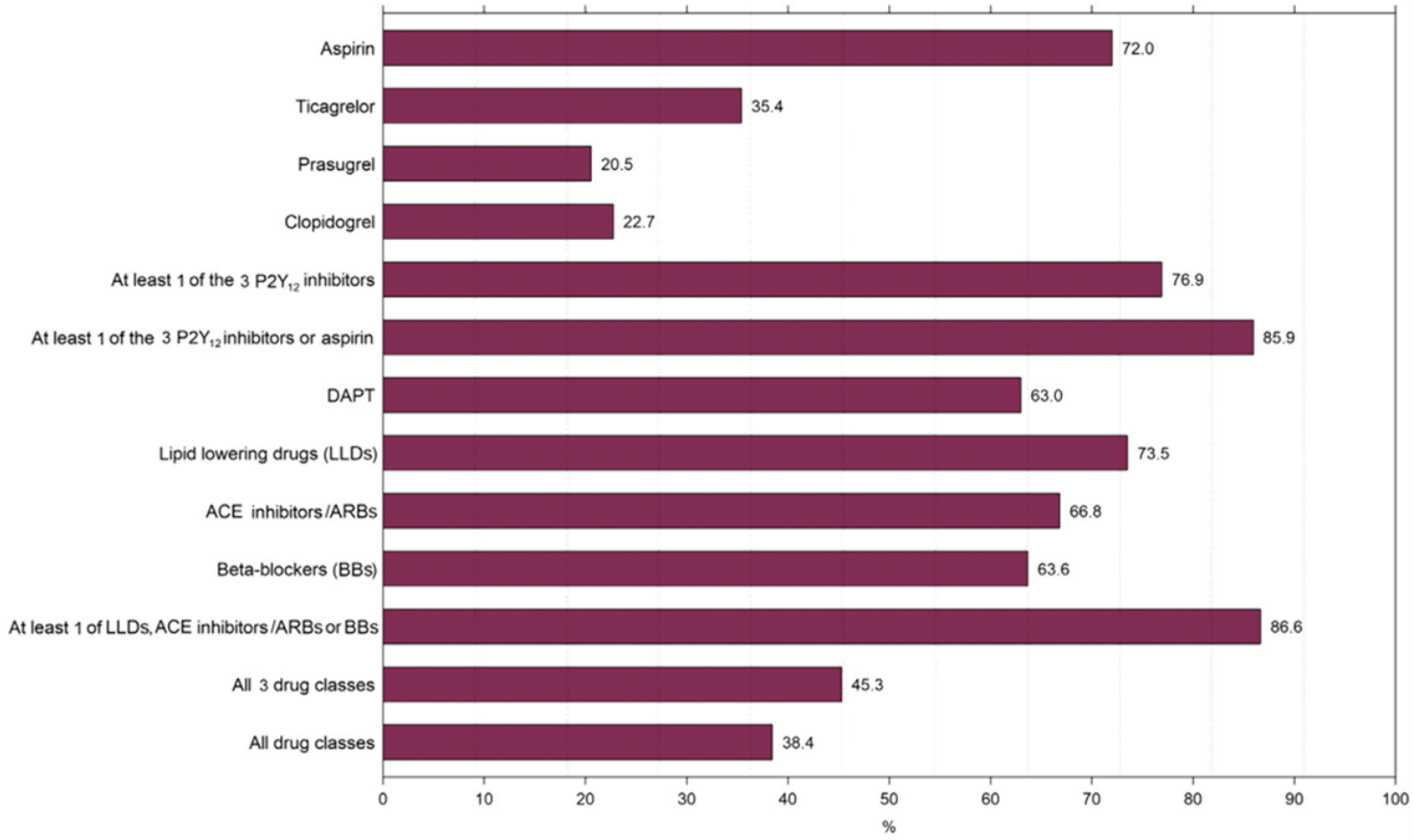


Figure. 1. Use of medication within 30 days after discharge in patients with myocardial infarction. ACE = angiotensin-converting enzyme; ARBs = angiotensin receptor blockers; BBs = beta-blockers; DAPT = dual antiplatelet therapy; LLDs = lipid-lowering drugs.

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

Huber Cl Ther 2019

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- **Suboptimal adherence in osteoporotic patients with parenteral drugs;**
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- Effects of BMD measurement and of Bone Turnover Markers on adherence;
- Some experiments with positive effects on adherence.

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[1] · S. Sajjan[1] · R. Insinga[1] · J. Weaver[1] · E. M. Lewiecki[2] · S. T. Harris[3]

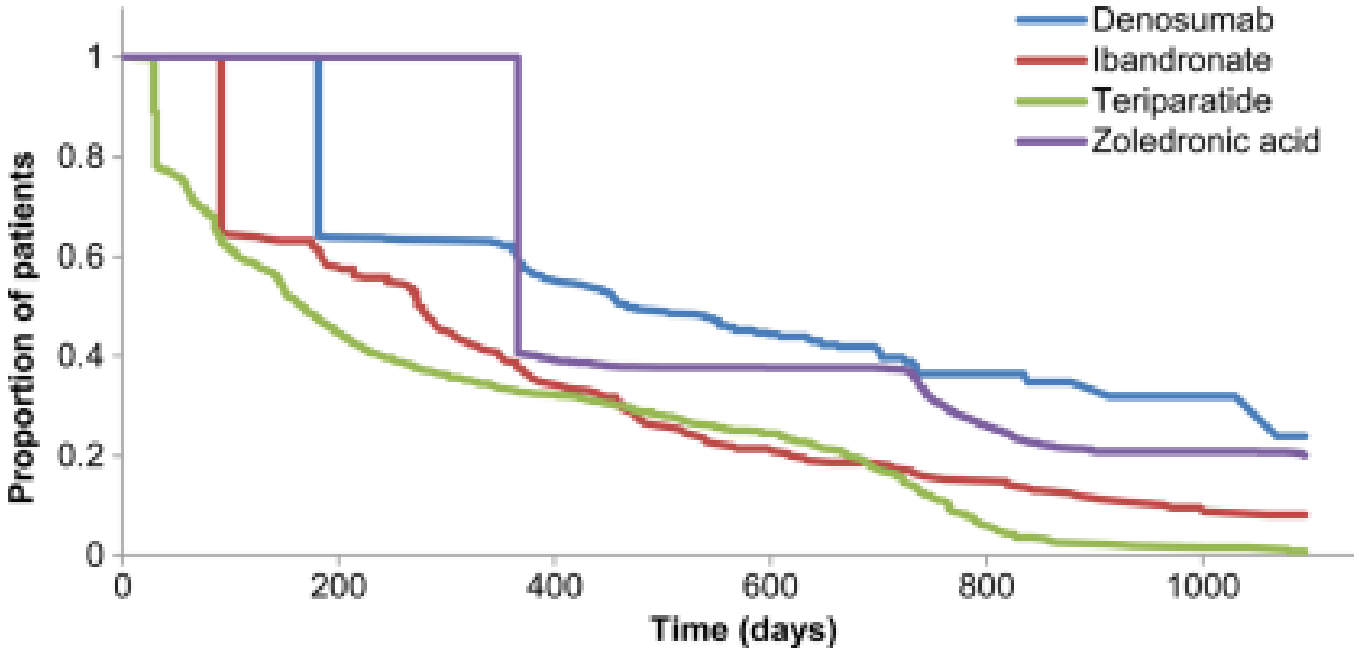

Fig. 3 Proportion of patients remaining on the prescribed injectable osteoporosis therapy. Data was obtained from Kaplan–Meier survival analyses, where survival was equivalent to remaining on the prescribed therapy

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[1] · V. Goetz[1] · B. Vandermeer[2] · J. Homik[1] · F. A. McAlister[3] · D. Kendler[4] · C. Ye[1]

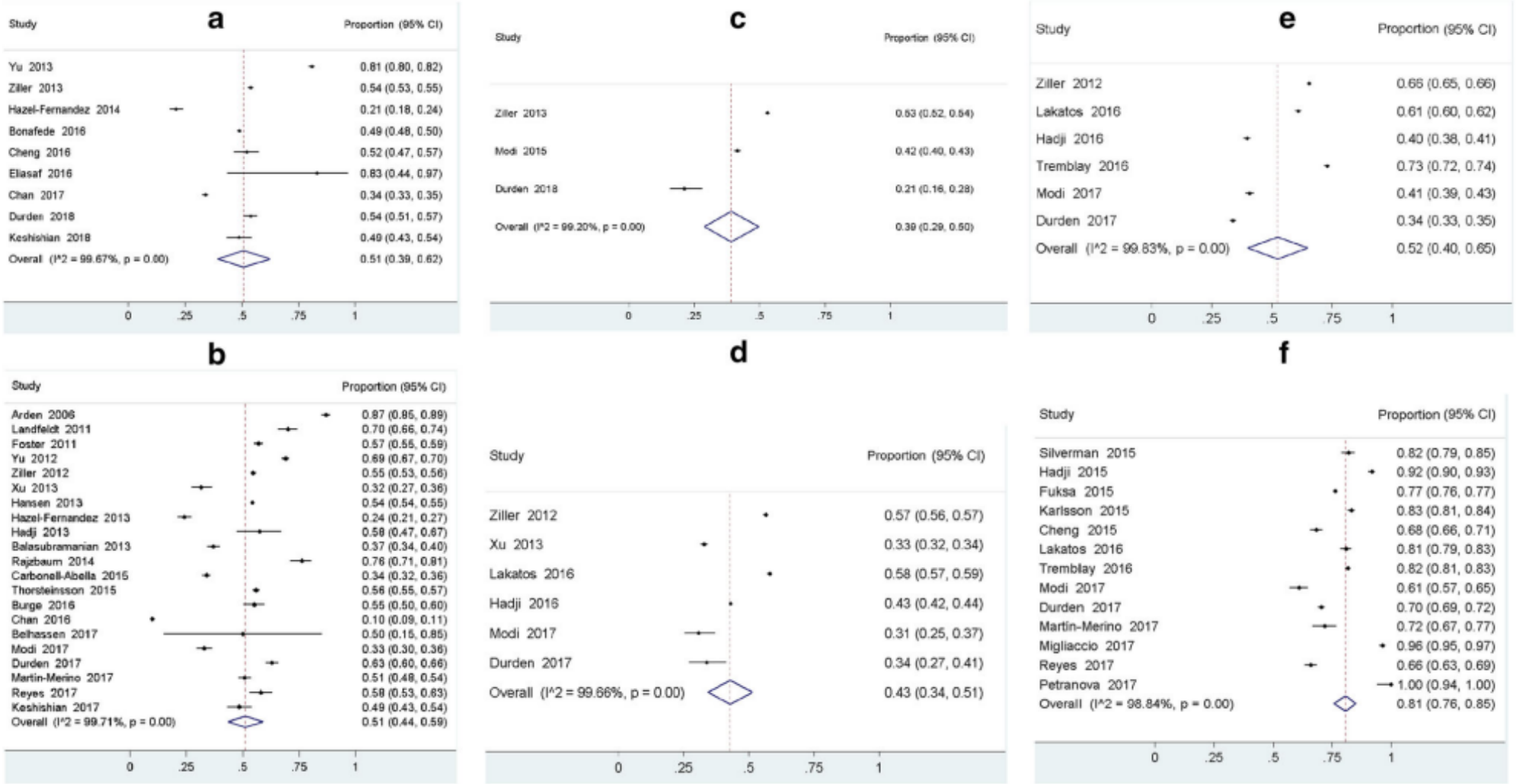

Fig. 2 Forest plots summarizing **a** teriparatide 12-month adherence, **b** teriparatide 12-month persistence, **c** ibandronate 12-month adherence, **d** ibandronate 12-month persistence, **e** zoledronic acid 2nd dose persistence, and **f** denosumab 2nd dose persistence

Why monitoring matters?

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- 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.

Reasons for non-adherence are numerous and multidimensional

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)

M. Hiligsmann[1] · D. Cornelissen[1] · B. Vrijens[2] · B. Abrahamsen[3,4,5] · N. Al-Daghri[6] · E. Biver[7] · M.L. Brandi[8] · O. Bruyère[9] · N. Burlet[10] · C. Cooper[11,12] · B. Cortet[13] · E. Dennison[11] · A. Diez-Perez[14] · A. Gasparik[15] · A. Grosso[16] · P. Hadji[17] · P. Halbout[18] · J.A. Kanis[19,20] · J.M. Kaufman[21] · A. Laslop[22] · S. Maggi[23] · R. Rizzoli[7] · T. Thomas[24] · S. Tuzun[25] · M. Vlaskovska[26] · J.Y. Reginster[6,9]

- Patient-related: misconception about osteoporosis (“traumatic fracture”, lack of insight in high risk for future fractures),fear for side-effects, preferrring 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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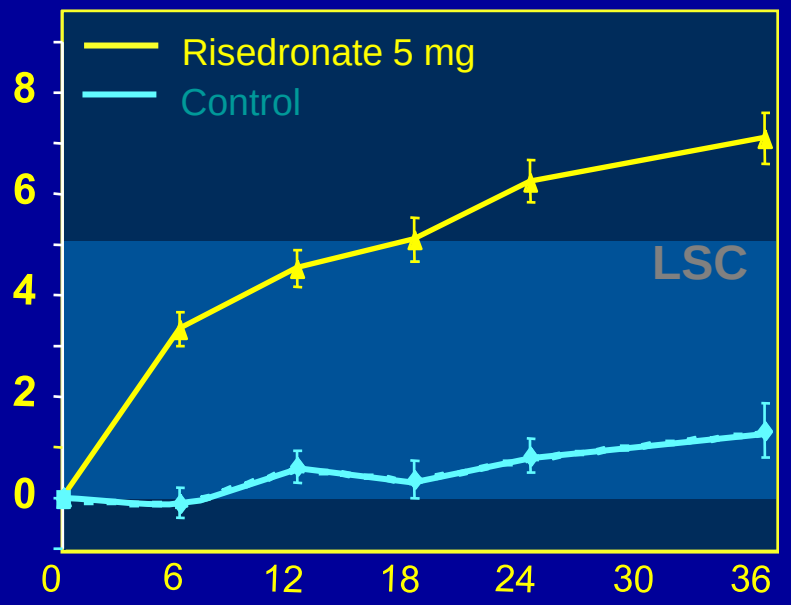
- Some experiments with positive effects on adherence.

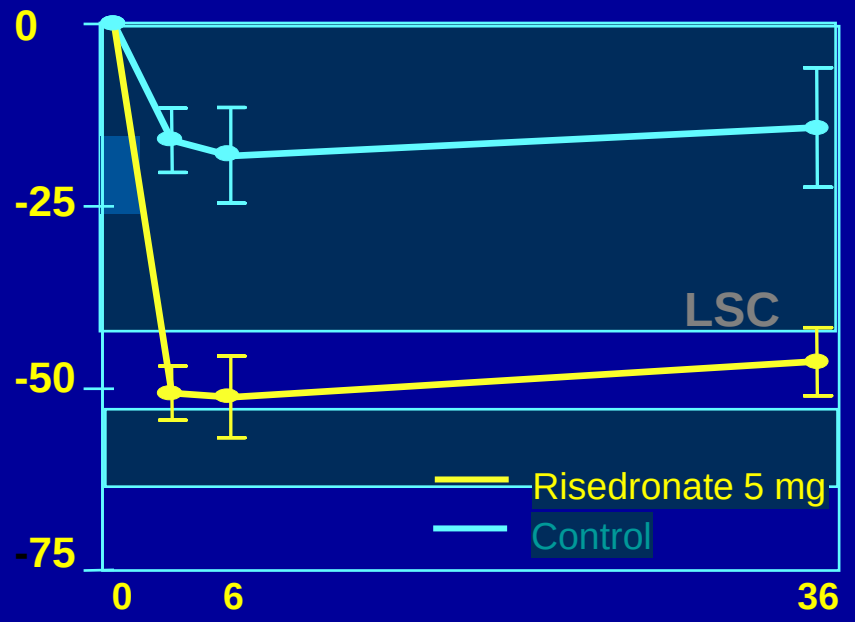
The Average Response to Risedronate 5 mg Exceeds LSC Earlier for BTMs (3 Months) than BMD (18 Months)

Spine BMD (% Δ from baseline)



Time (months)

NTX (% Δ from baseline)

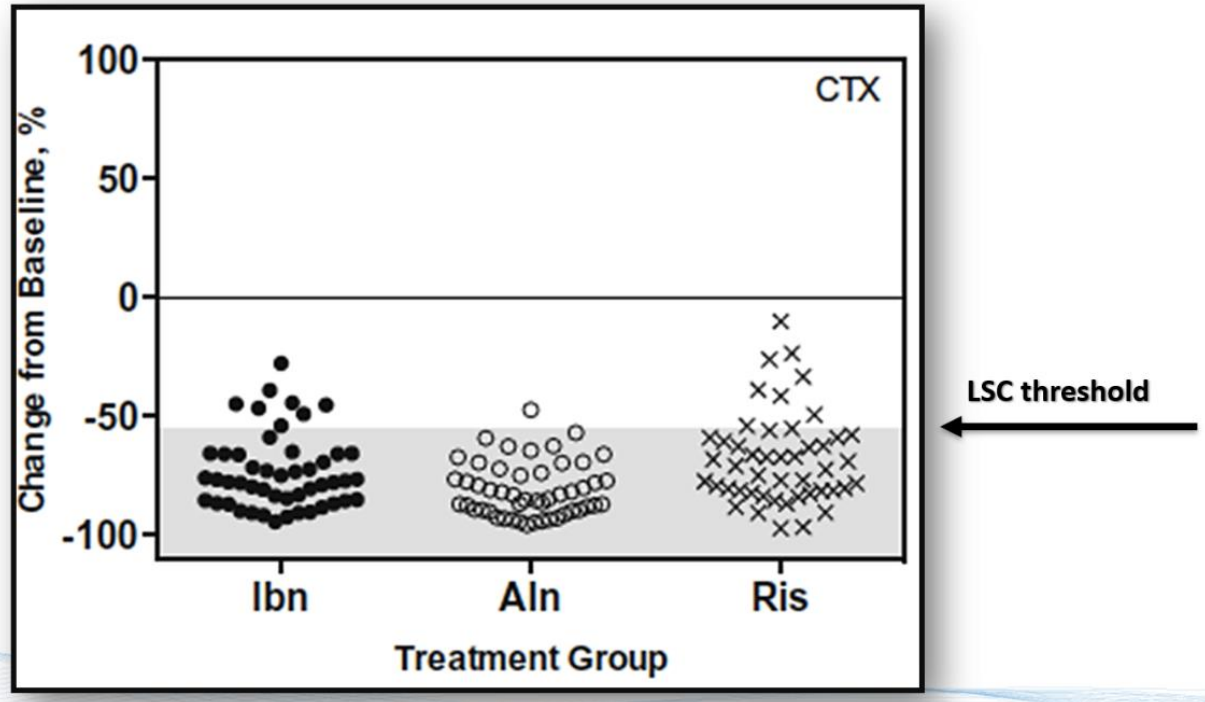


Time (months)

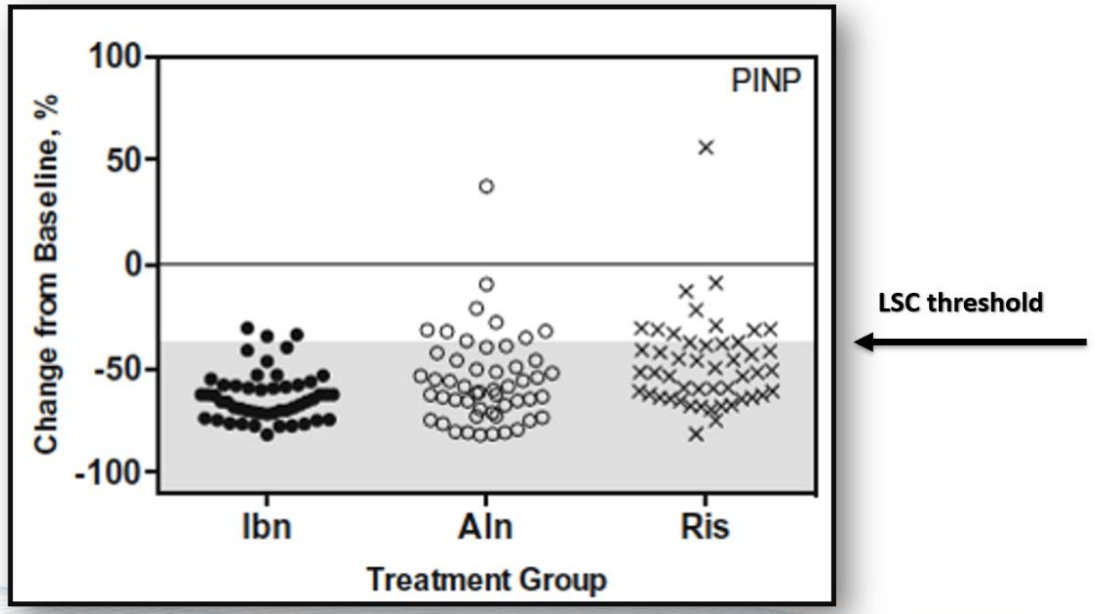
LSC = least significant change.

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

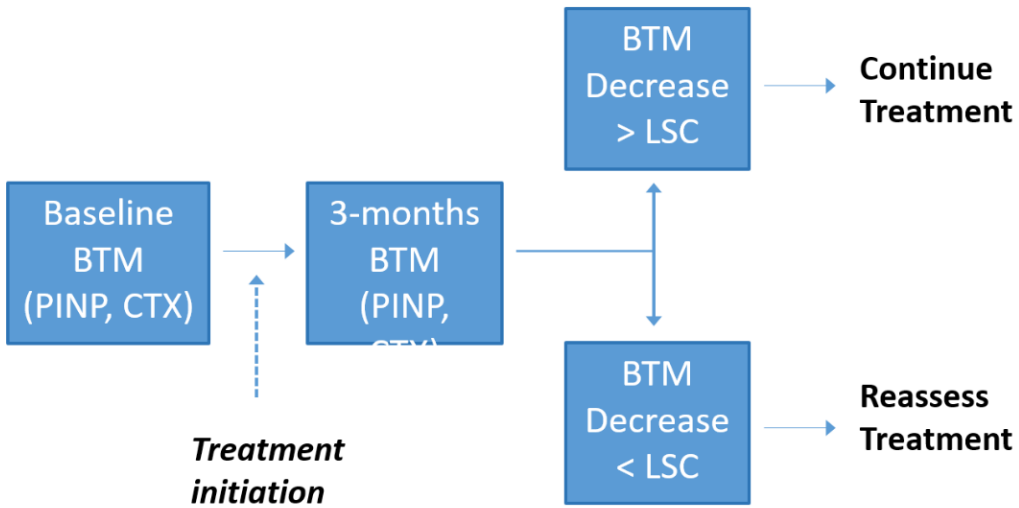
EFFECT OF BPS ON SERUM CTX



EFFECT OF BPS ON SERUM P1NP



ALGORITHM FOR ADHERENCE SCREENING



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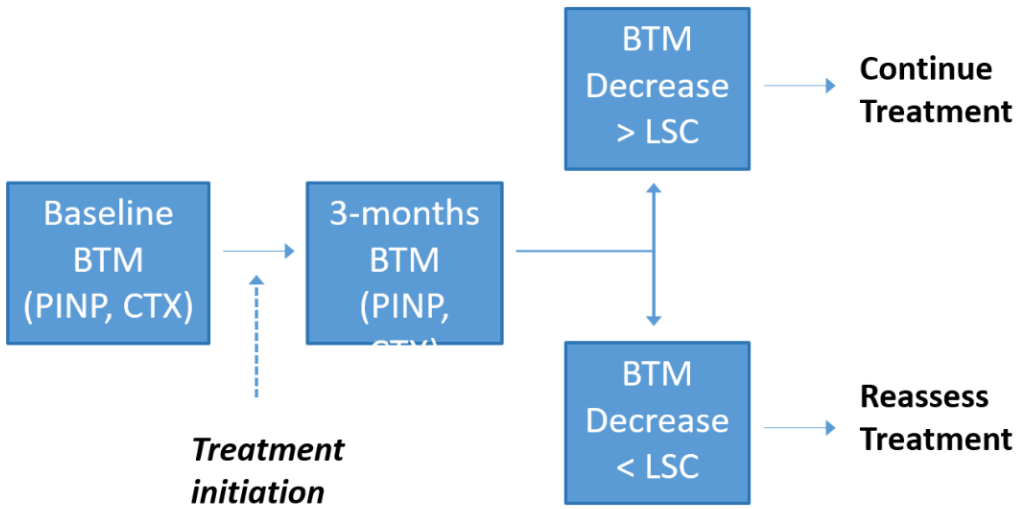


IF BTM DO NOT DECREASE…

Reassess treatment

Poor adherence !!!
- Treatment stopped
- Wrong administration

Other causes
- Undetected secondary osteoporosis
- Interfering medications
- Lack of efficacy

BY TOPICS

- OSTEOPOROSIS
- EPIDEMIOLOGY
- FRACTURES
- CALCIUM
- SKELETAL RARE DISORDERS
- VITAMIN D
- NUTRITION & LIFESTYLE
- CAPTURE THE FRACTURE
- OSTEOPOROSIS AND ASSOCIATED DISORDERS
- OSTEOPOROSIS AND COVID19

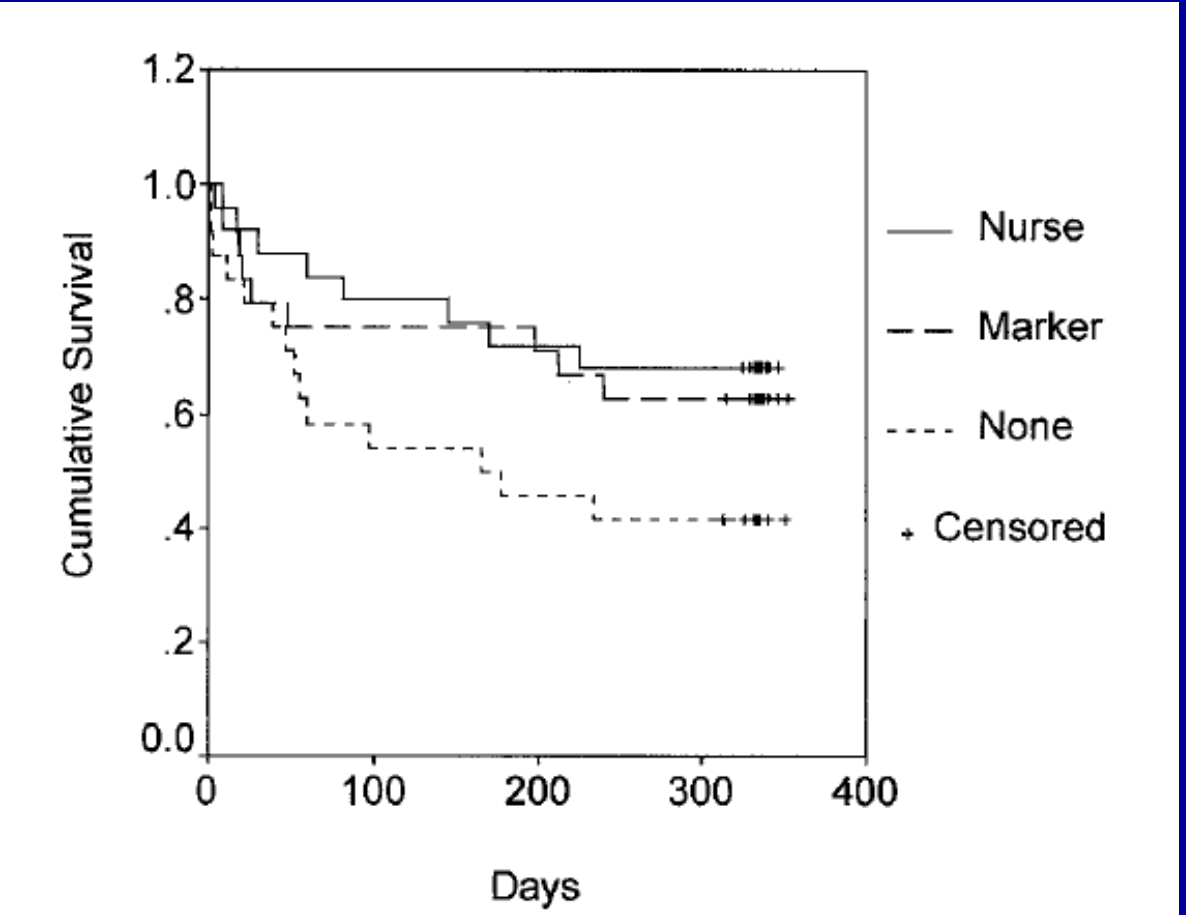
BY TOPICS

OSTEOPOROSIS	EPIDEMIOLOGY	FRACTURES	CALCIUM	SKELETAL RARE DISORDERS
VITAMIN D	NUTRITION & LIFESTYLE	CAPTURE THE FRACTURE	OSTEOPOROSIS AND ASSOCIATED DISORDERS	OSTEOPOROSIS AND COVID19

Monitoring??

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

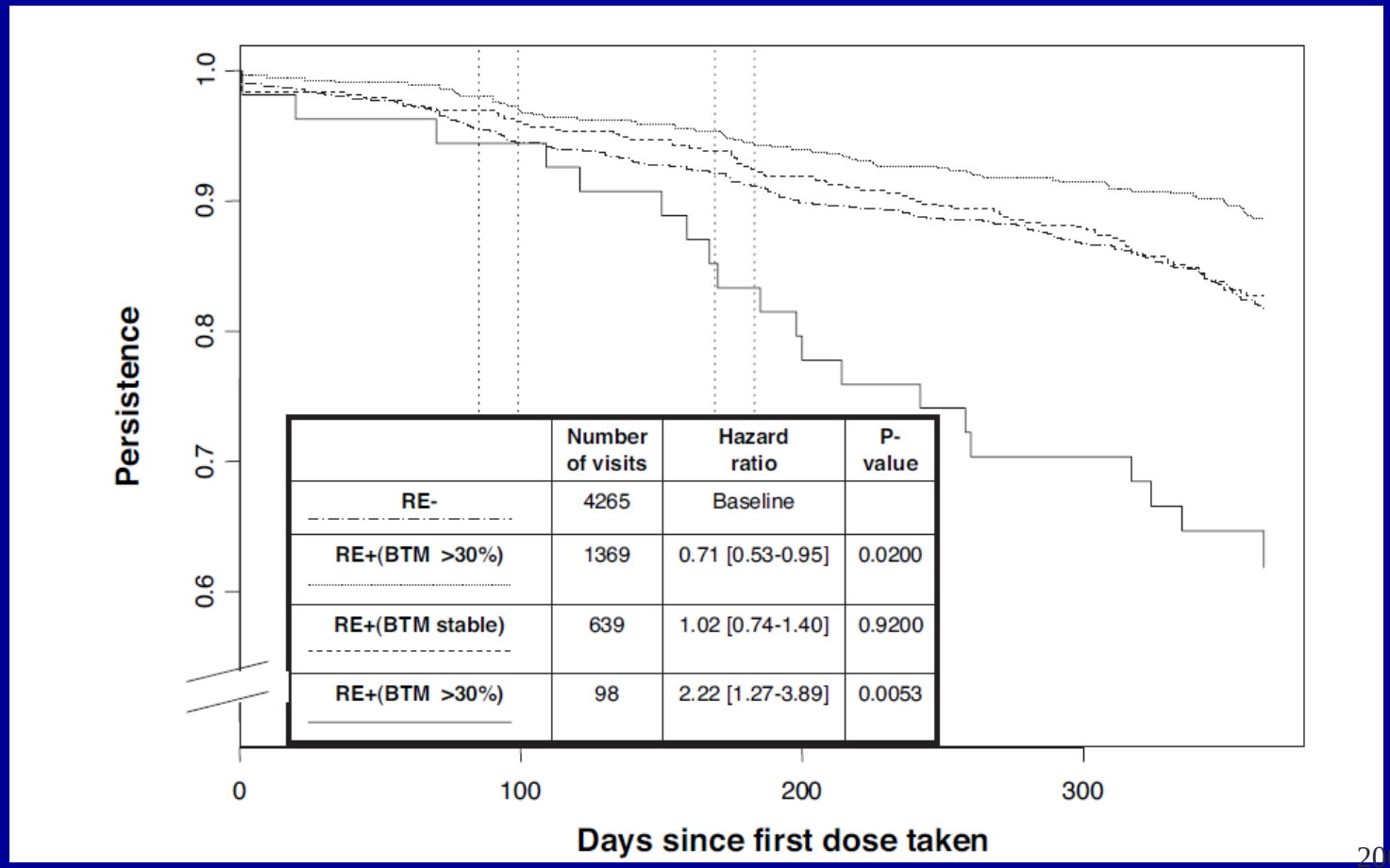
JACKIE A. CLOWES, NICOLA F. A. PEEL, AND RICHARD EASTELL
Bone Metabolism Group, University of Sheffield, Sheffield, United Kingdom S57 AU



The Journal of Clinical Endocrinology & Metabolism 89(3):1117–1123

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*



	Number of visits	Hazard ratio	P-value
RE-	4265	Baseline	
RE+(BTM >30%)	1369	0.71 [0.53-0.95]	0.0200
RE+(BTM stable)	639	1.02 [0.74-1.40]	0.9200
RE+(BTM >30%)	98	2.22 [1.27-3.89]	0.0053

2009

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

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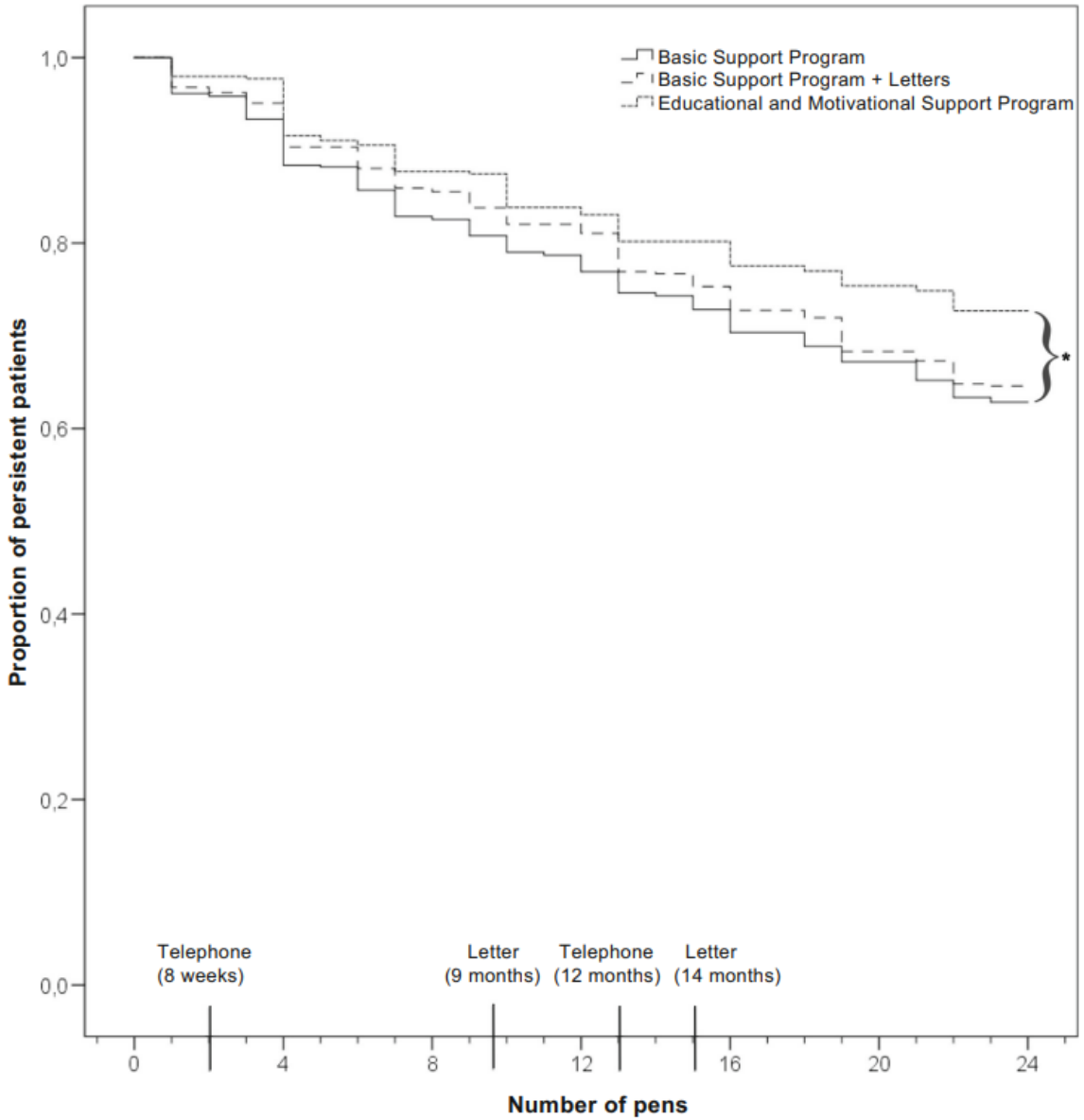

Fig. 1 Persistence with teriparatide according to the different support programs

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

ORIGINAL ARTICLE

Check for updates

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

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

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

ORIGINAL ARTICLE

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

Ewald Boschitsch[1,2] · Oliver Naegele[2] · Anita Klinger[1,2] · Harald Brix-Samoylenko[1]

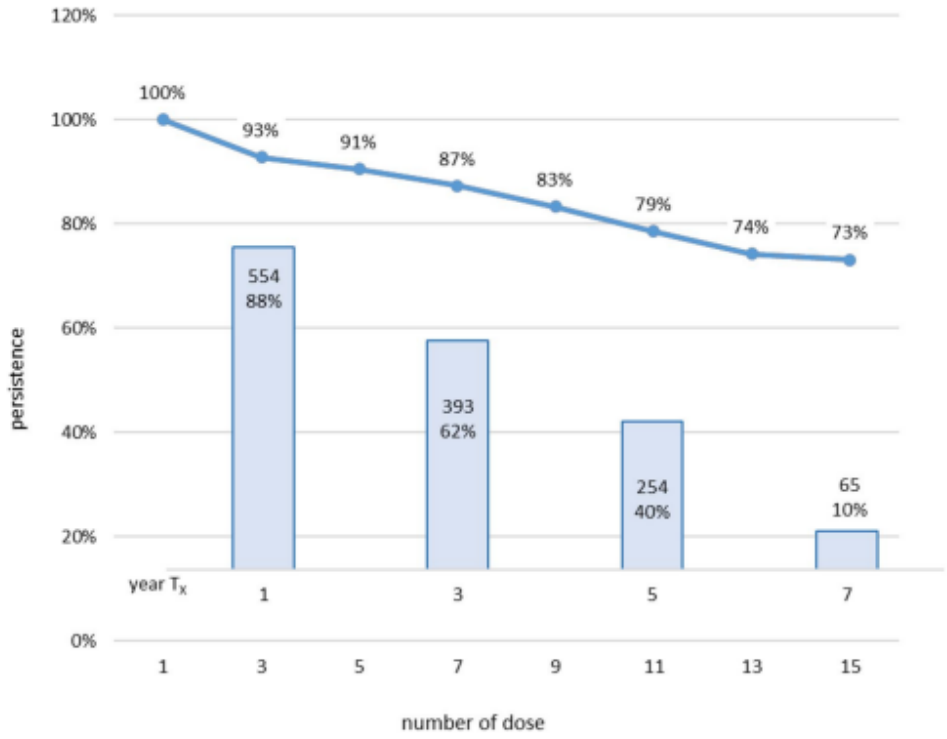

Fig. 2 Rate of cumulative persistence by number of doses in relation to number and rate of internal patients

Osteoporosis International (2022) 33:263–272
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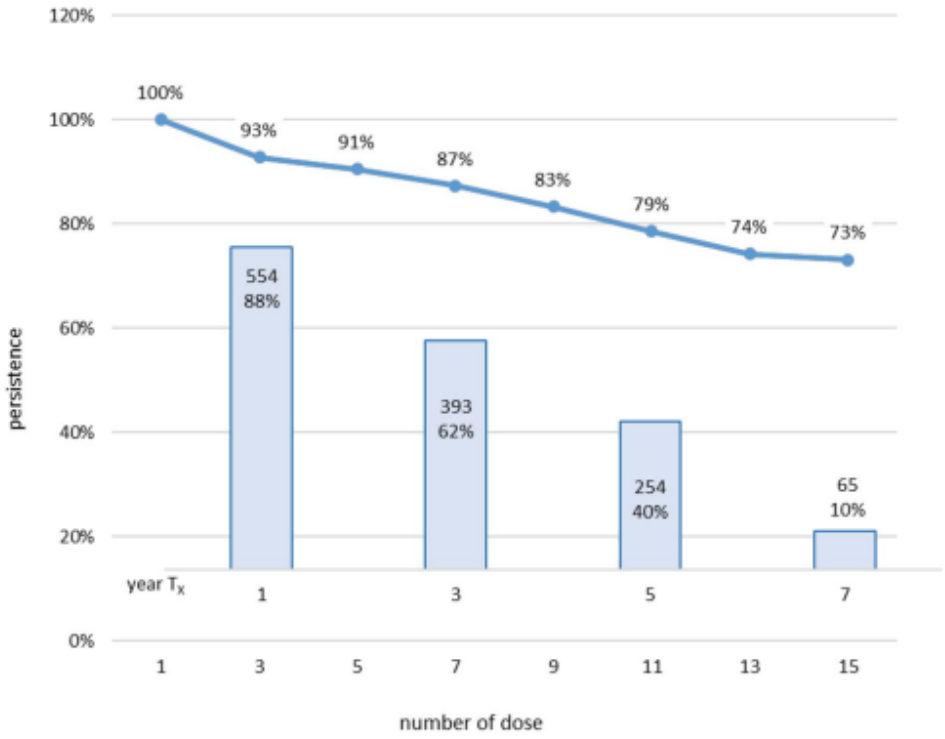


Fig. 2 Rate of cumulative persistence by number of doses in relation to number and rate of internal patients

Fig. 3 Mean values of BMD at the hip (±95% confidence intervals) by doses 1, 3, 5, 7, 9 and 11 (n = 157)

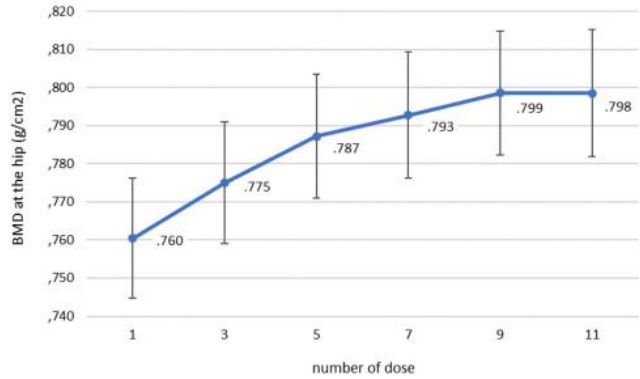
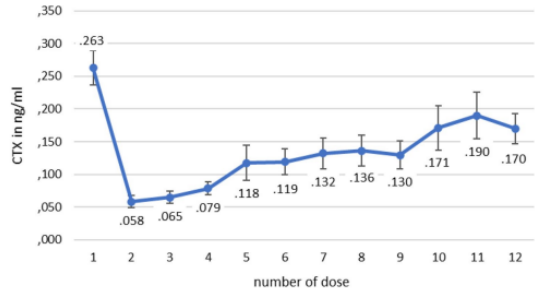


Fig. 4 Mean serum values of CTX (±95% confidence intervals) by doses 1 to 12 (n = 180)



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 [1], 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 [1], 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

1

- 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: wf.lems@amsterdamumc.nl.

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

Check for updates

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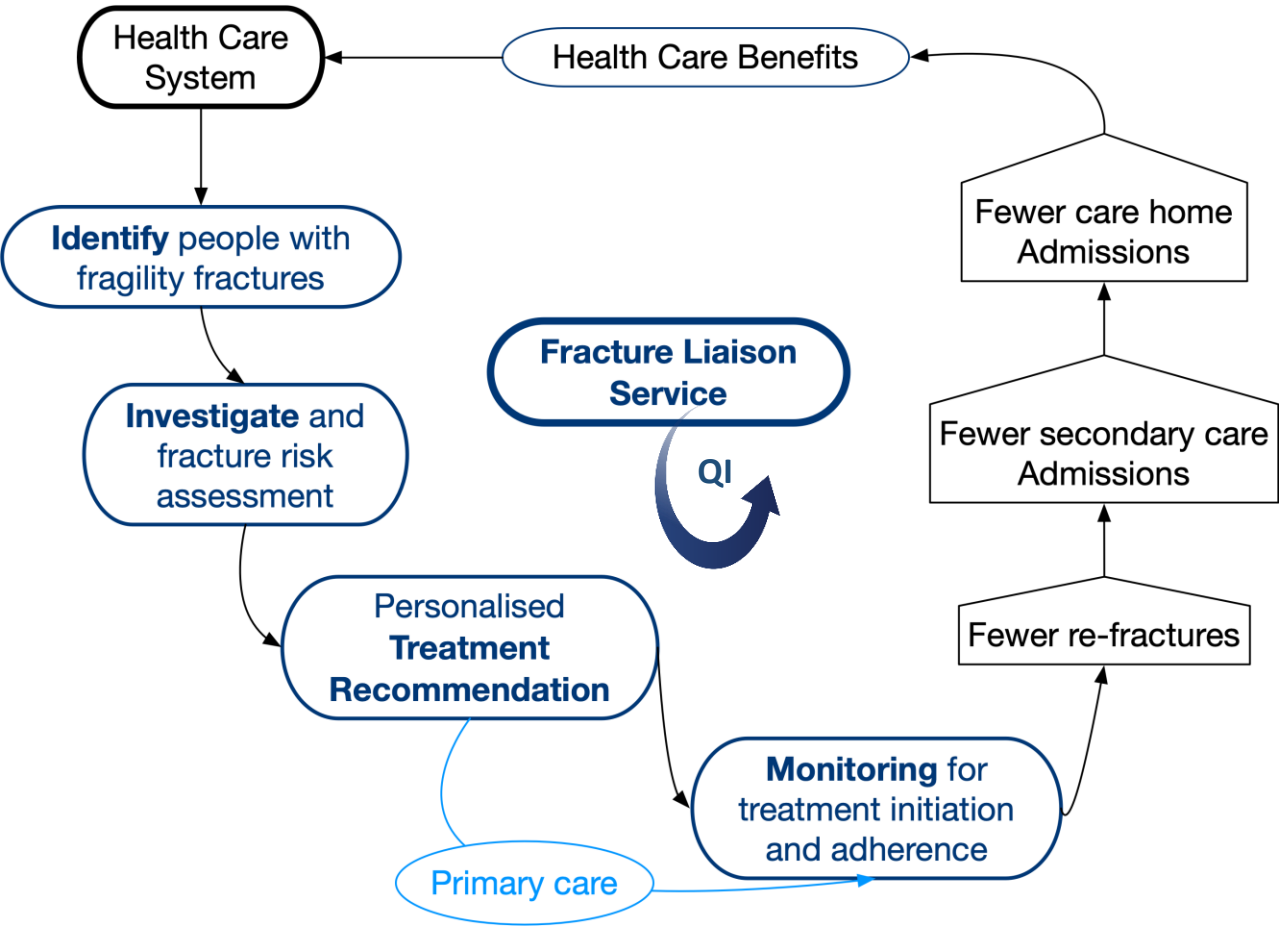
M. Hiligsmann[1] · D. Cornelissen[1] · B. Vrijens[2] · B. Abrahamsen[3,4,5] · N. Al-Daghri[6] · E. Biver[7] · M.L. Brandi[8] · O. Bruyère[9] · N. Burlet[10] · C. Cooper[11,12] · B. Cortet[13] · E. Dennison[11] · A. Diez-Perez[14] · A. Gasparik[15] · A. Grosso[16] · P. Hadji[17] · P. Halbout[18] · J.A. Kanis[19,20] · J.M. Kaufman[21] · A. Laslop[22] · S. Maggi[23] · R. Rizzoli[7] · T. Thomas[24] · S. Tuzun[25] · M. Vlaskovska[26] · J.Y. Reginster[6,9]

Received: 13 June 2019 / Accepted: 18 July 2019 / Published online: 7 August 2019

Chesser OTA 2022; Mitchell Curr Osteo Rep 2019

What is a Fracture Liaison Service/ FLS?



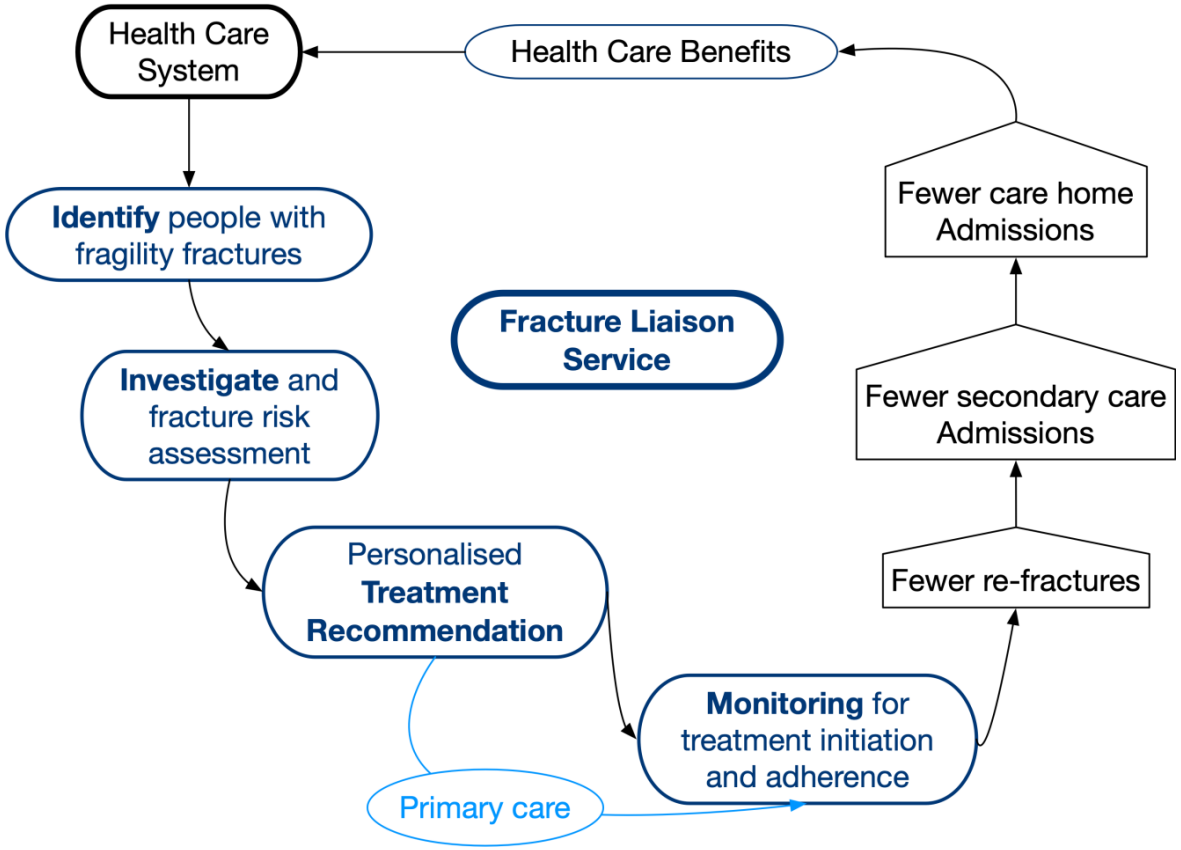
Small group of doctors nurses, administrators and other healthcare professionals

Follow templated pathways

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

Leave complex patients for bone specialist

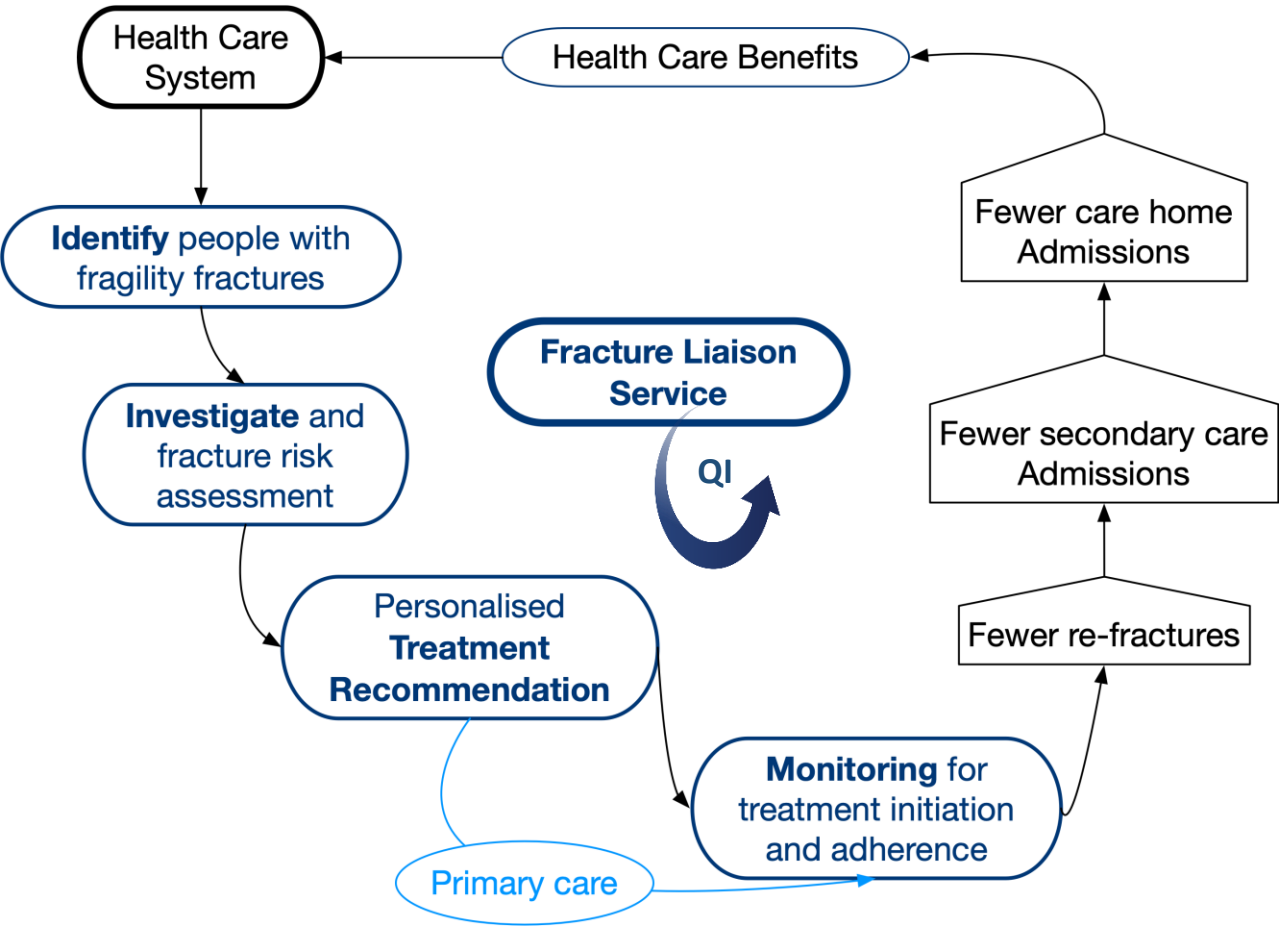
Fracture Liaison Service (FLS) pathway: what is monitoring



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?

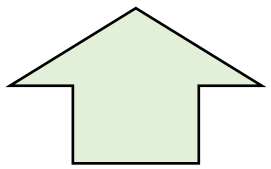
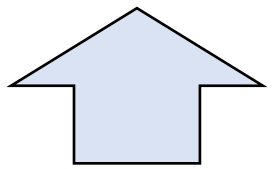
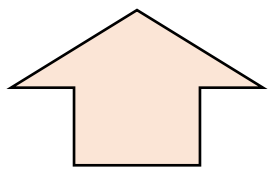
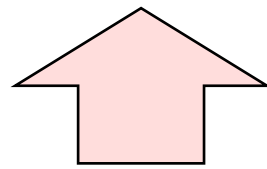


Our Aim

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

Optimal Number of fractures avoided	=	No of patients identified	x	% Recommended Treatment	x	% Starting treatment Quickly	x	% Staying on Treatment
		80%		50%		80%		

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

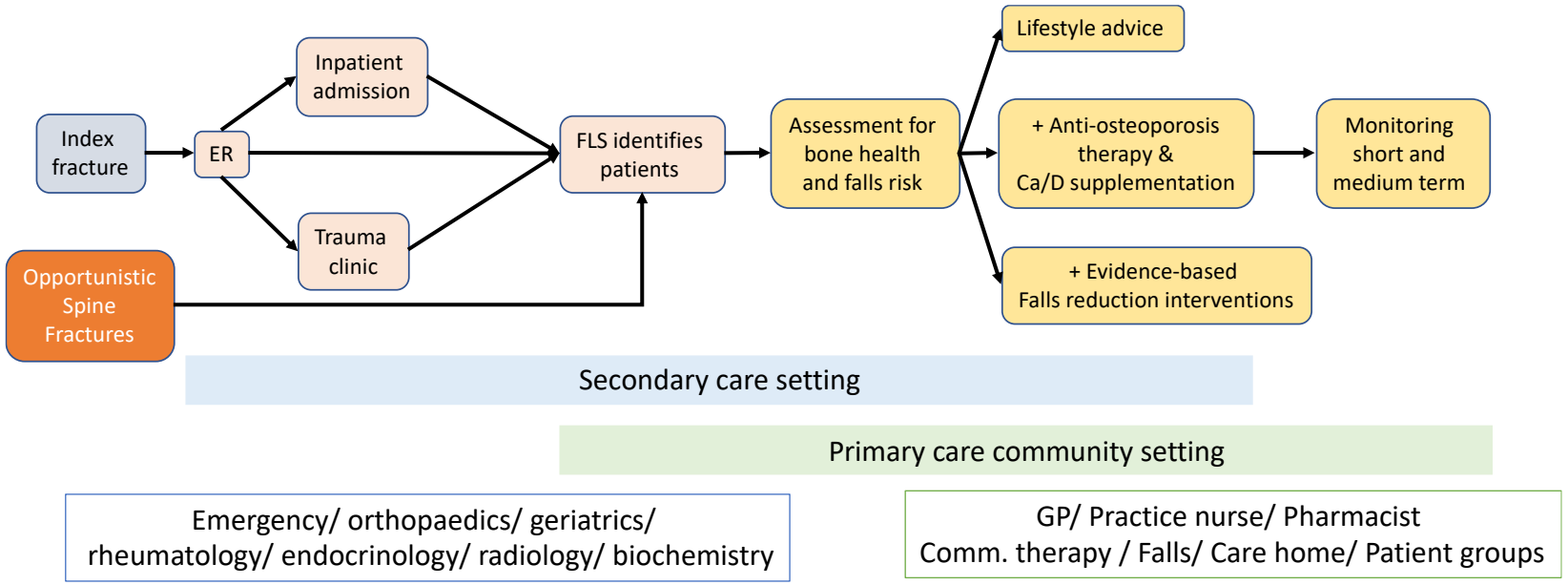





Why 80 / 50 / 80 matters

N= 78	2021 (n=73,615)	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=

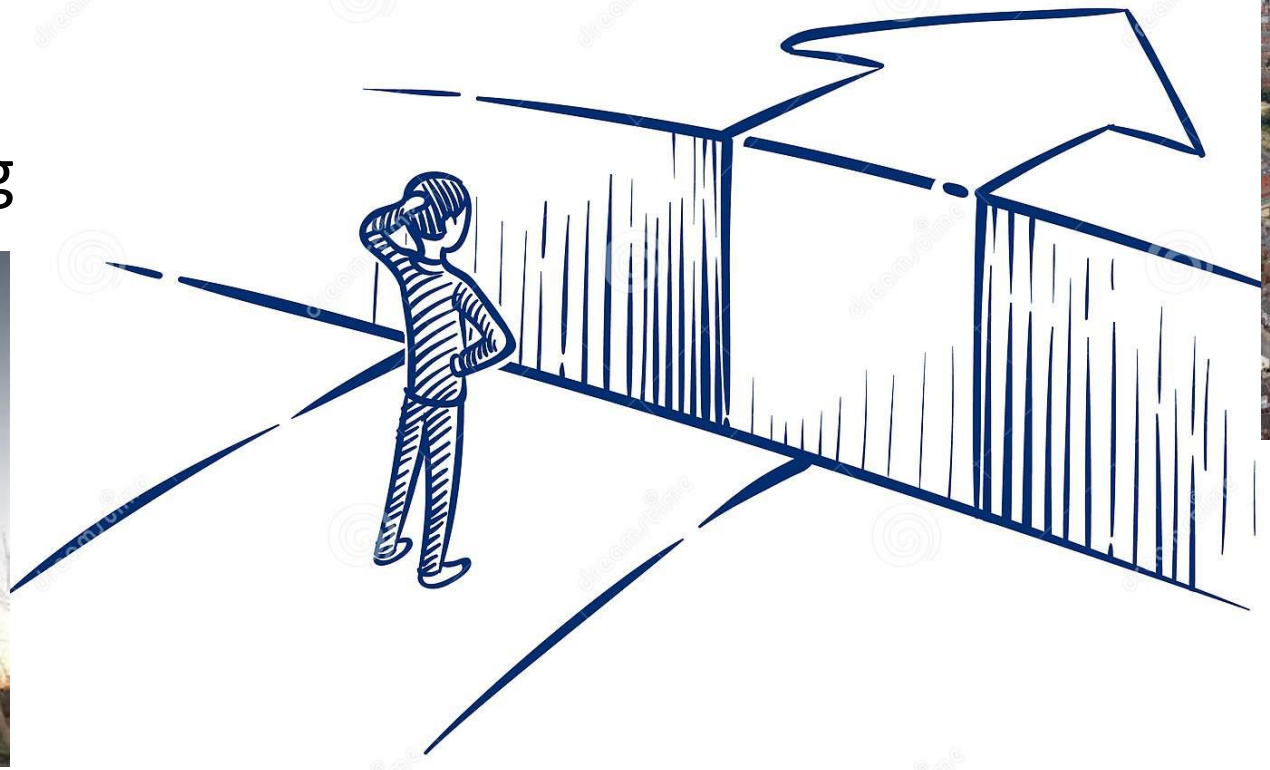
Challenge 1: Environment: Fracture patient journey

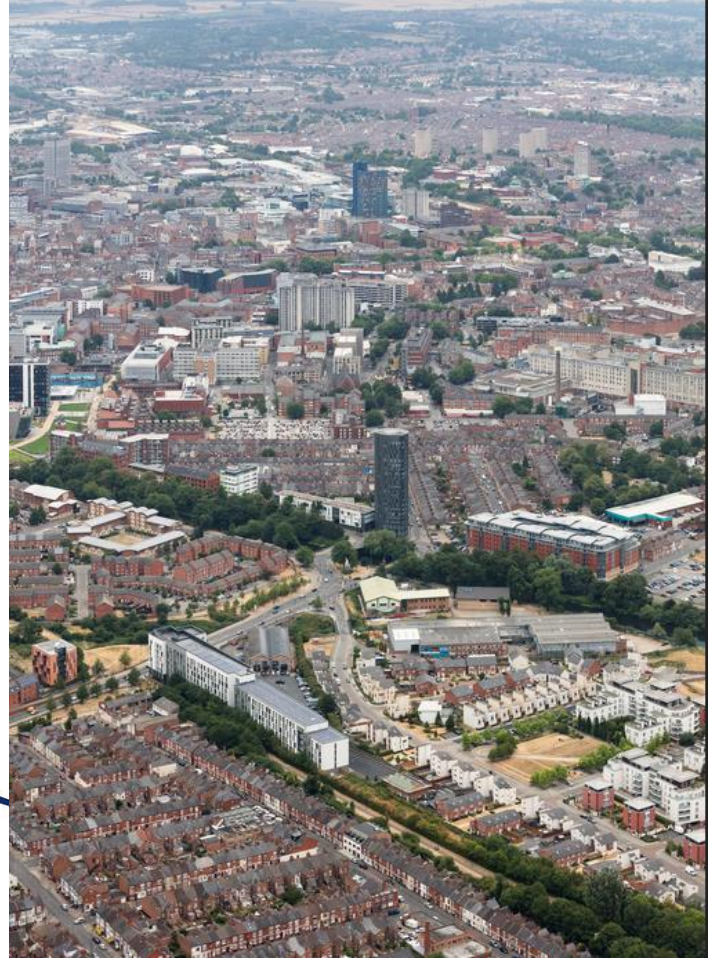


Volatile – big changes in patient numbers, staffing, hospital systems, primary care activity
Uncertainty – not predictable
Complex – many factors are involved
Ambiguity – never know all the information

Chasm of patient care

Hospital Setting





Community setting

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?

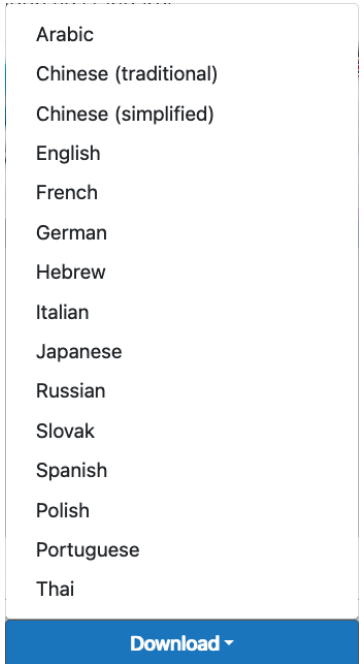
BEST PRACTICE FRAMEWORK

HEALTH CARE QUALITY

AIM:

1. **Set the standard for FLS (13 criteria)**
2. **Guidance**
3. **Benchmarking and Quality improvement**

➢ Available in 15 different languages



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 globally-endorsed 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.				

Akesson OI 2013

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 www.capturethefracture.org/best-practice-framework.

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?

- (●) Yes
- ( ) No

S2. 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
- [x] 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:

- [x] < 6 months
- [x] 7-12 months
- [ ] 13-24 months
- [ ] > 25 months

S5. Do you time patient re-evaluation from:

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

S6. In what manner are patients monitored?

Please select all that apply:

- [ ] Prescription review
- [ ] Telephone interview
- [ ] Postal questionnaire
- [ ] Clinic review
- [ ] DXA
- [ ] DXA-VFA
- [ ] Other, please specify:

S7. 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
- [x] Other, please specify:

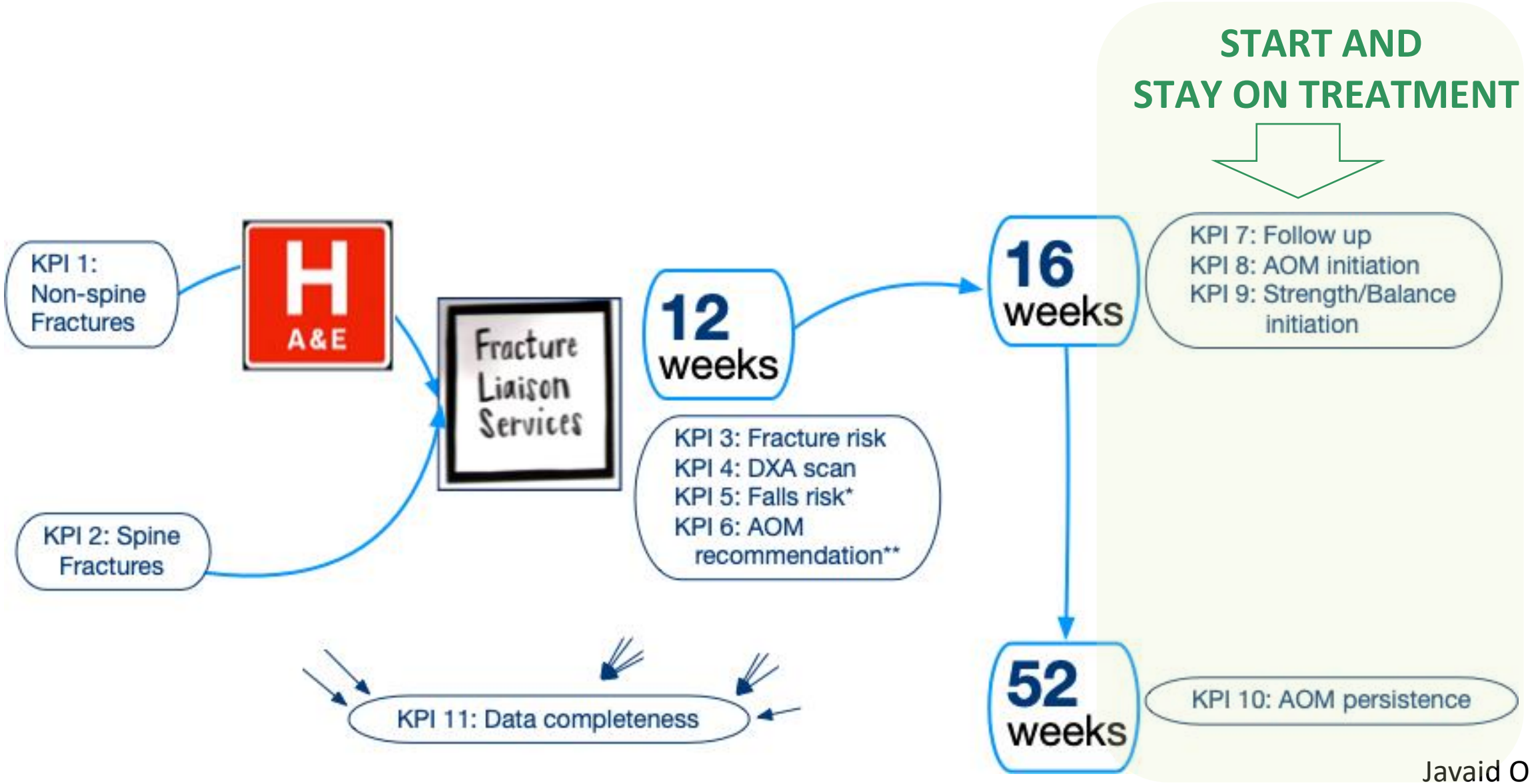
fracture prevention includes refe

S8. 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



Javaid OI 2020

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:	**Hip**	Other inpatient	Trauma outpatients	Clinical Spine	Radiological Spine
1. Proportion of patients identified by FLS (>80%, 50-79%, <50%, No, DK)					
2. Time from fracture diagnosis to start FLS assessment (<12wks, >12wks, DK, NA)					
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:	**Hip**	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
2. Time from fracture diagnosis to start FLS assessment (<12wks, >12wks, DK, NA)	< 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)	National	Local	Local	Local	x
9. Service improvement cycle completed in last 12 months (yes / no)	No	No	Yes	No	No

AOM – anti-osteoporosis medication

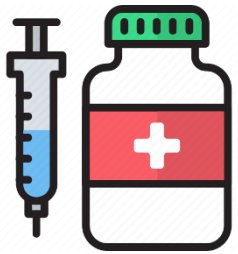
Challenge 3: **Capability**

Challenge 3: **Capability**

World Health Organization

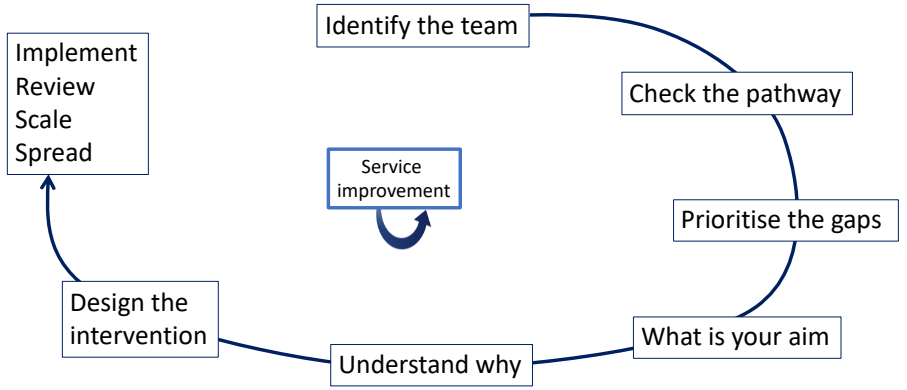
Osteoporosis definition

FRAX® Fracture Risk Assessment Tool



Monitoring detail
Who
When
What
Consequence

Quality / Healthcare Improvement



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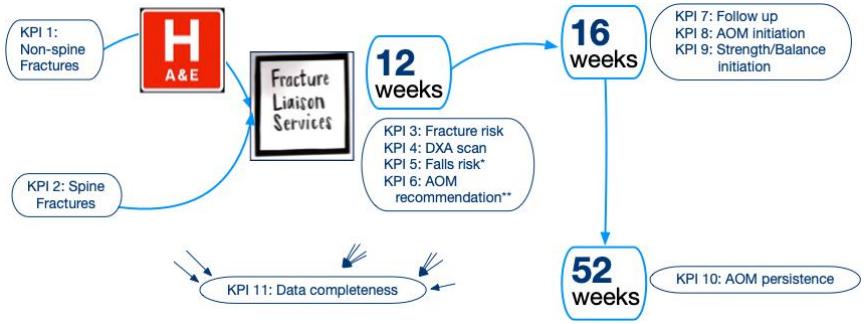
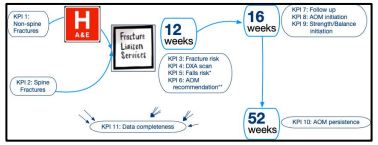


Patient and carer Co-production

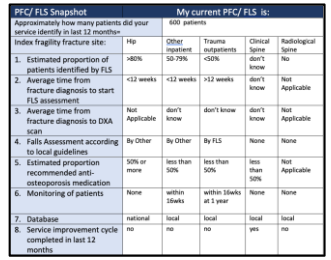
- Content
- Outcomes
  - Process
  - Clinical
  - Balancing
- Training
- Support
- Communication
- Evaluation
  - Learn
  - Refine
- Sustainability
- Embed
- Report
- Share
- Spread

Implement
Review
Scale
Spread

Identify the team

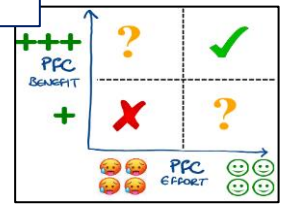


Check the pathway



PFC/ FLS Snapshot	My current PFC/ FLS is:				
Approximately how many patients did your service identify in last 12 months=	600 patients				
Index fragility fracture site:	Hip	Other inpatient	Trauma outpatients	Clinical Spine	Radiological Spine
1. Estimated proportion of patients identified by FLS	>80%	50-79%	<50%	don't know	No
2. Average time from fracture diagnosis to start FLS assessment	<12 weeks	<12 weeks	>12 weeks	don't know	Not Applicable
3. Average time from fracture diagnosis to DXA scan	Not Applicable	don't know	don't know	don't know	Not Applicable
4. Falls Assessment according to local guidelines	By Other	By Other	By FLS	None	None
5. Estimated proportion recommended anti-osteoporosis medication	50% or more	less than 50%	less than 50%	less than 50%	Not Applicable
6. Monitoring of patients	None	within 16wks	within 16wks at 1 year	None	None
7. Database	national	local	local	local	local
8. Service improvement cycle completed in last 12 months	no	no	no	yes	no

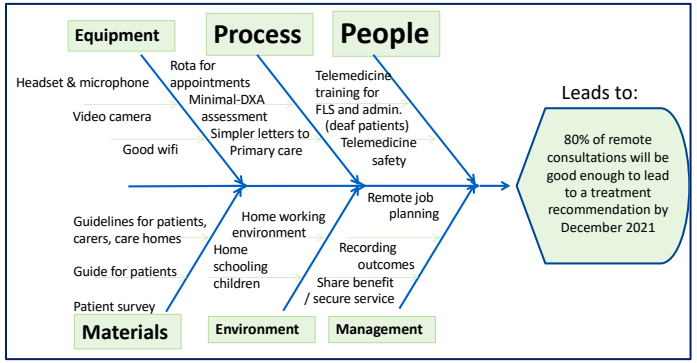
Prioritise the gaps

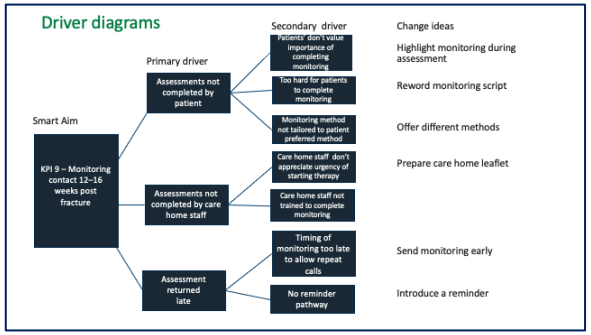


What is your aim

S	Specific	A precise outcome
M	Measurable	A defined element to demonstrate the outcome
A	Achievable	Realistic given the constraints of time & resources
R	Relevant	Directly linked to a goal
T	Timely	Includes when outcomes would be achieved

Understand why



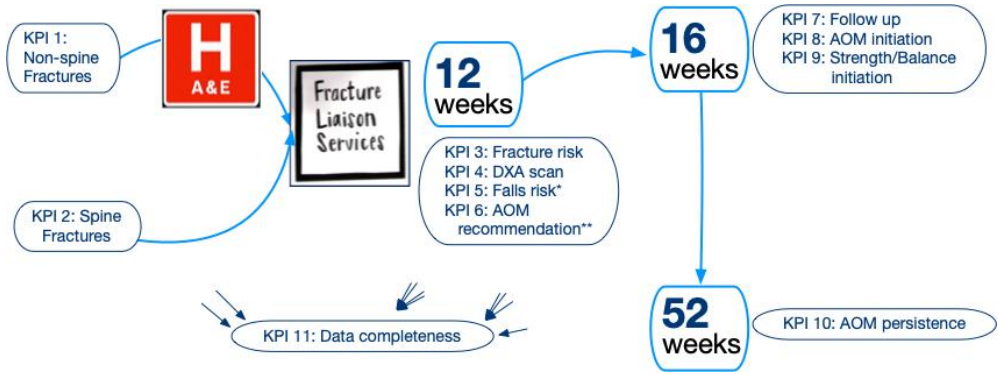


Design the intervention

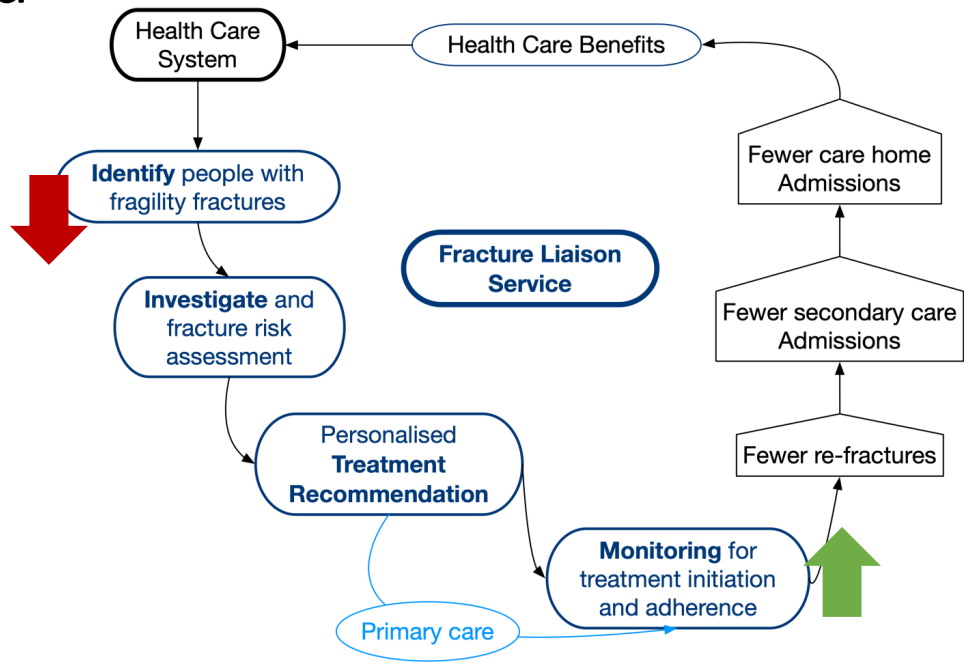
Becoming more Effective

Challenge 4: **Capacity**

Under staffed
Under supported



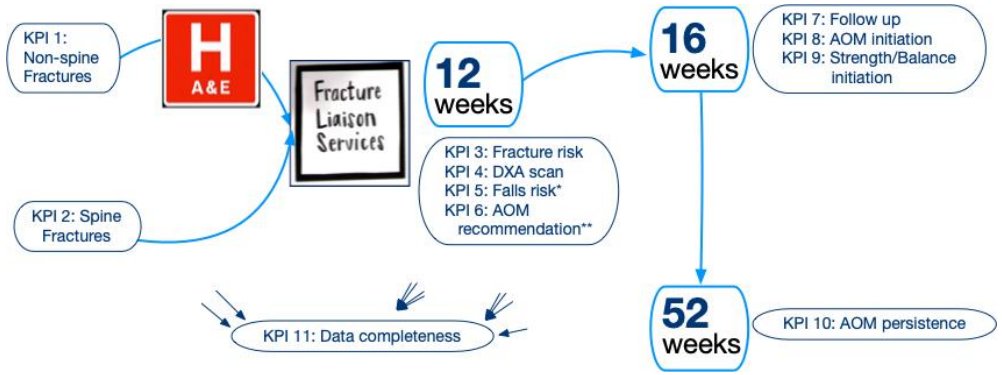
See more patients



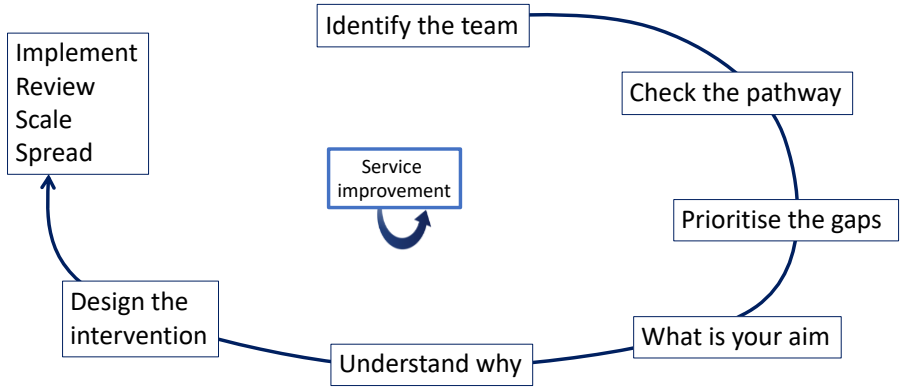
See fewer patients
& Monitor more

Challenge 4: **Capacity**

Under staffed
Under supported



See more patients

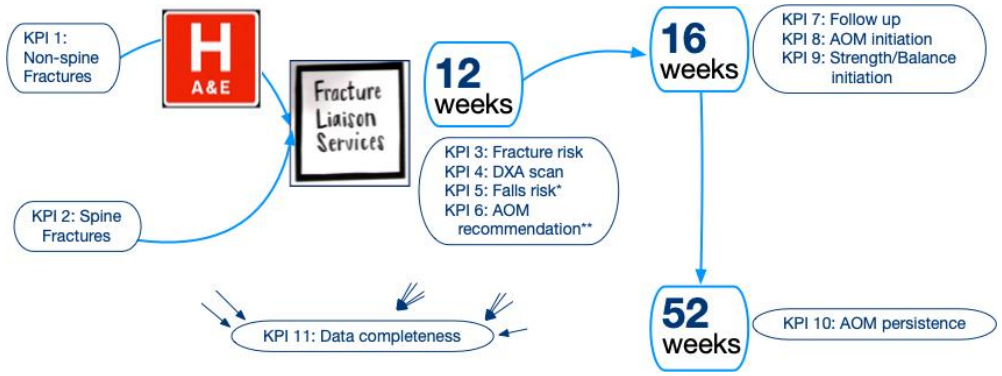


See fewer patients
& improve

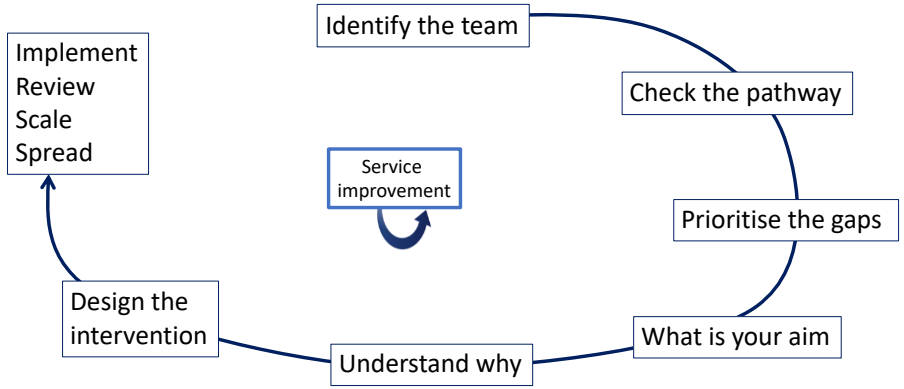
Evidence for the impact of implementing QI for patient benefit

Challenge 4: **Capacity**

Under staffed
Under supported



See more patients



See fewer patients
& improve

Evidence for the impact of implementing QI for patient benefit

NEED TO OPRIMIZE: implementing QI for FLS MODEL FIRST

England and Wales FLSDB audit:

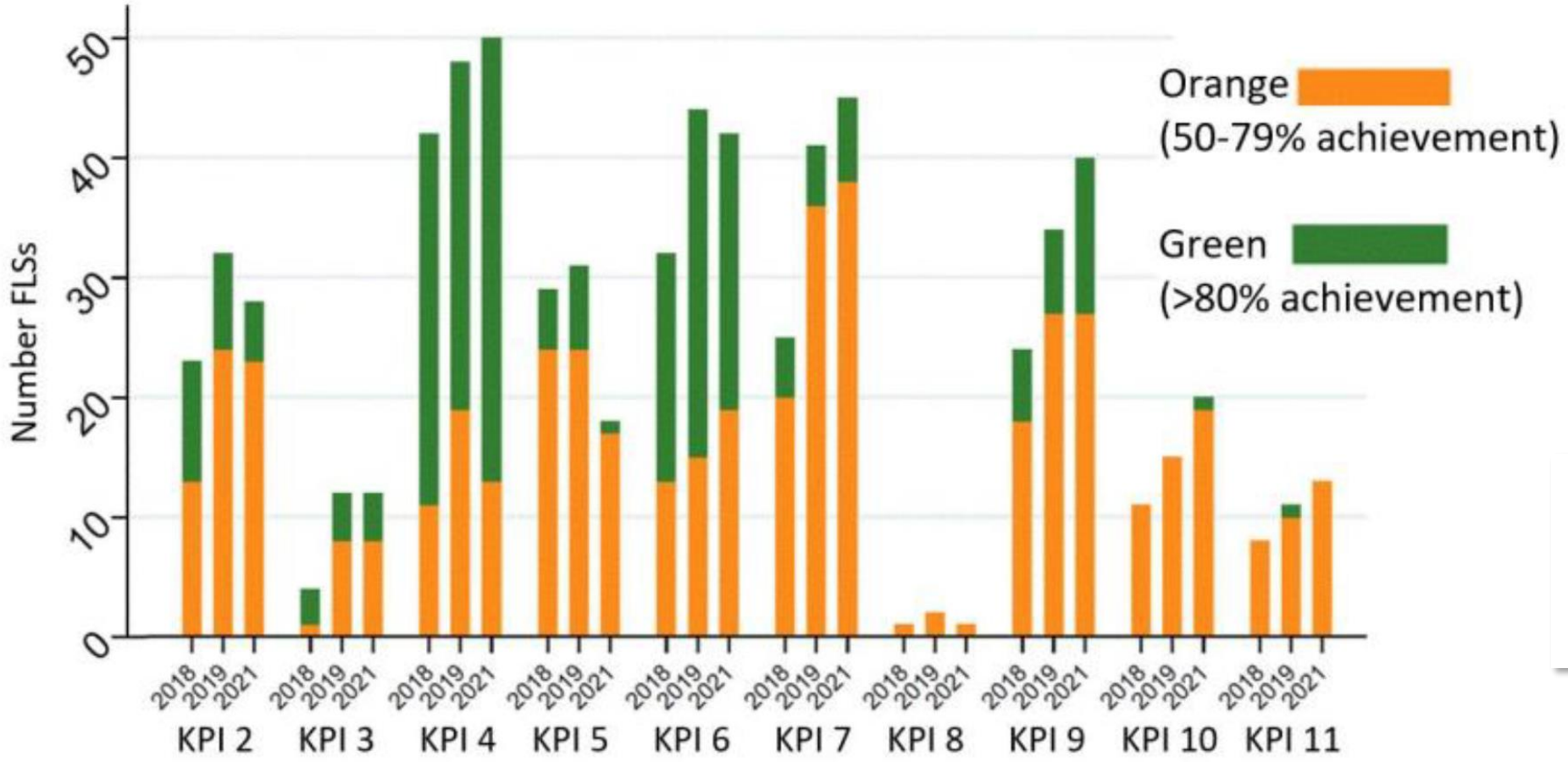


Figure 2: The number of services providing amber and green grades of performance in 2021 compared with 2019 and 2018.

How many
Extra fractures
Avoided?

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

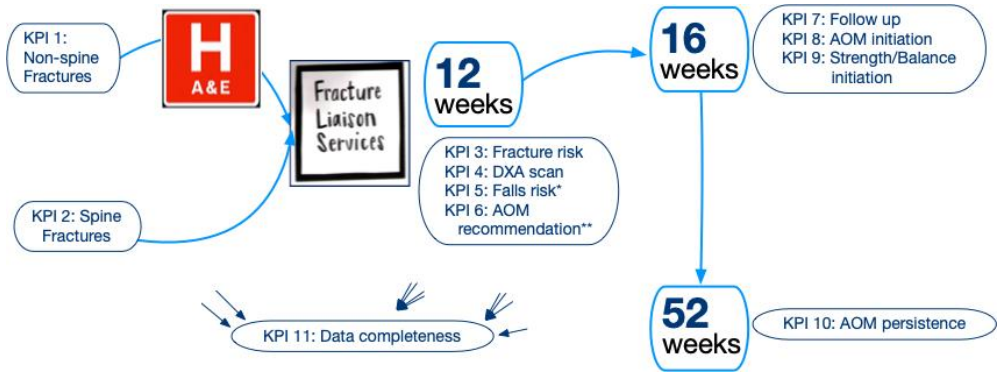
Deliver *Service Improvement*
more efficiently

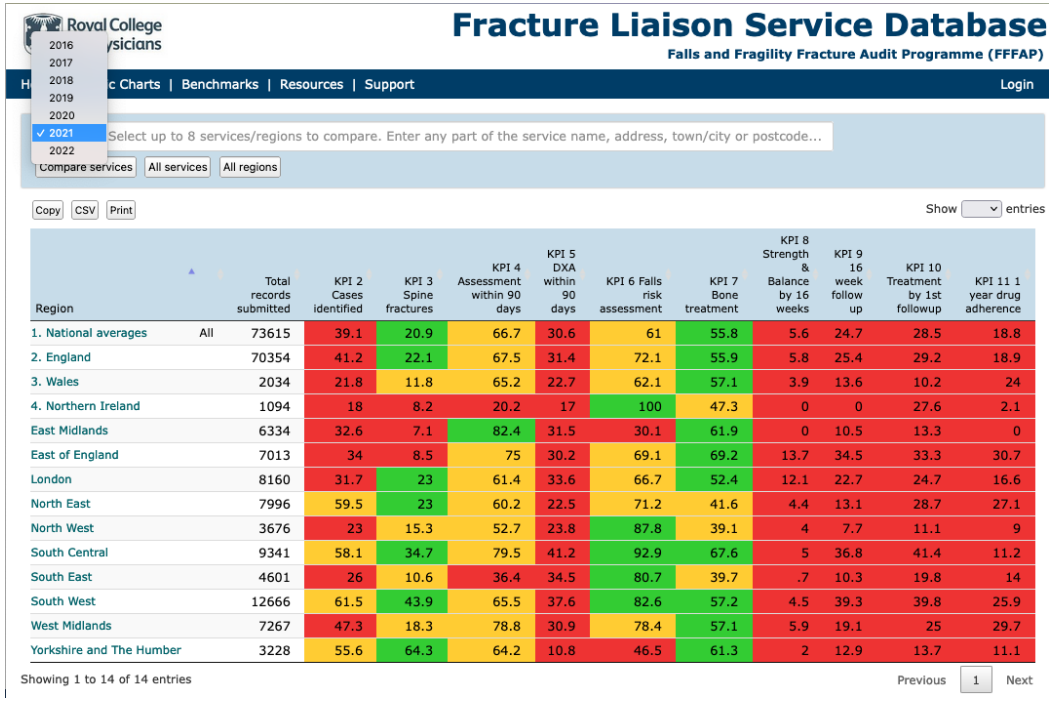
A) SEMI AUTOMATIC
Patient level data
Performance charts and tables

B) Digital Resources / Workbooks

Challenge 4: National patient level databases

National FLS database

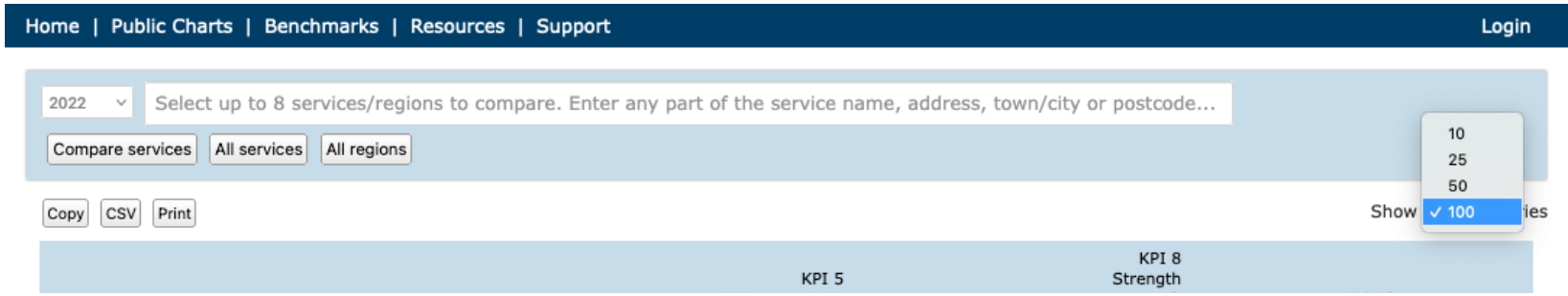




Region		Total records submitted	KPI 2 Cases identified	KPI 3 Spine fractures	KPI 4 Assessment within 90 days	KPI 5 DXA within 90 days	KPI 6 Falls risk assessment	KPI 7 Bone treatment	KPI 8 Strength & Balance by 16 weeks	KPI 9 16 week follow up	KPI 10 Treatment by 1st followup	KPI 11 1 year drug adherence
1. National averages	All	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

Showing 1 to 14 of 14 entries

Previous 1 Next



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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	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
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

Is that Enough?

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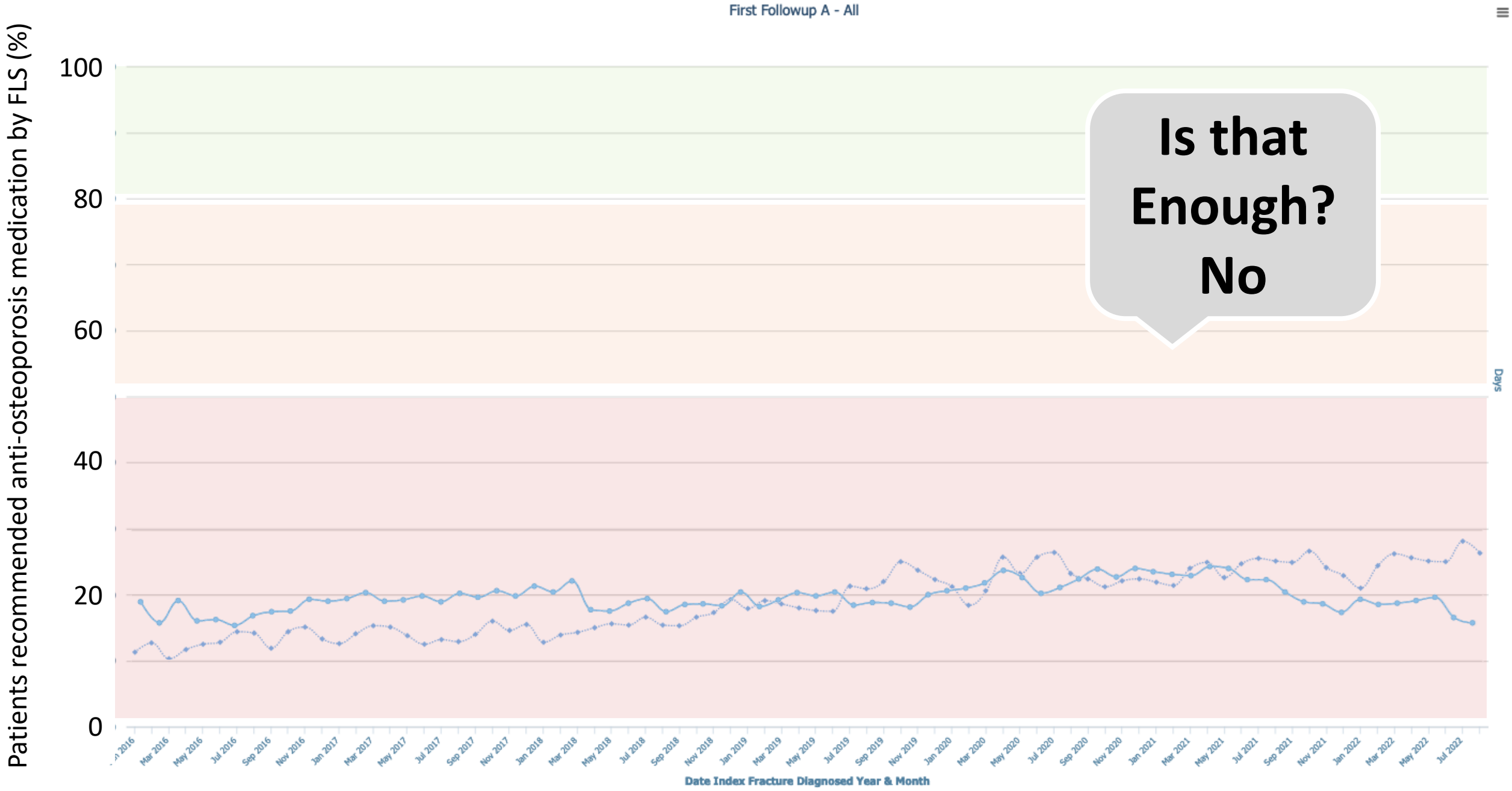
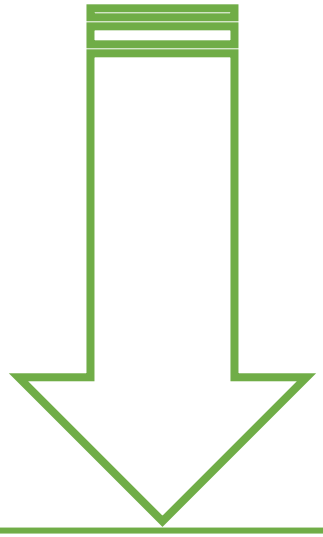

First Followup A - All
Patients recommended anti-osteoporosis medication by FLS (%)
100
80
60
40
20
0
Is that Enough? No
Days
Date Index Fracture Diagnosed Year & Month
Patients recommended drug therapy who were reviewed within 4 months National %
Patients adherent to prescribed drug at 1yr National %

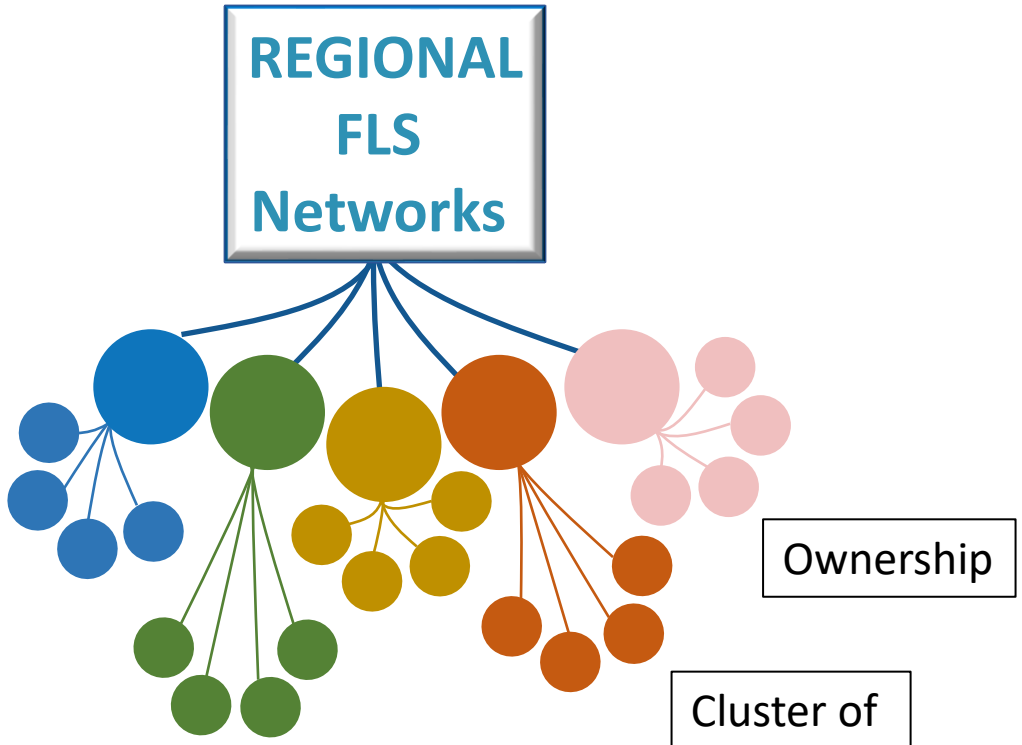
Challenge 5: Local delivery of improvement

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



Deliver *local* service improvement

Challenge 5: Local delivery of improvement



Mentors support FLSs

- Get started
- Get mapped
- Become more effective

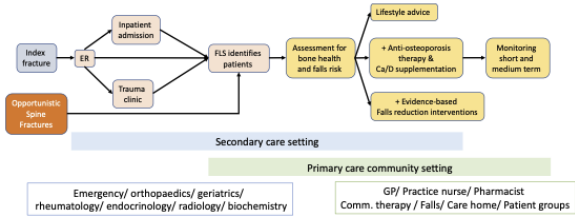
Coaching calls

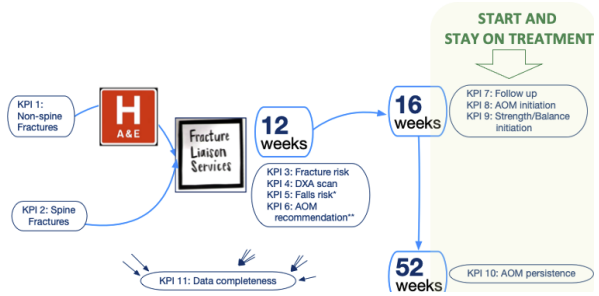
FLS <> FLS learn from each other

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





Monitoring detail
Who
When
What
Consequence