EHMA 2024

Shaping and managing
innovative health ecosystems

Defining the possible Economic Impact of Medical Second Opinions

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Defining the possible Economic Impact of Medical Second Opinions

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uIntroduction

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- Second Opinion
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- Conclusion
- Limitations

‘Conflict’ of interest

- Emergency Physician
- Second Opinions for ‘Royal Doctors’
- Advisory Physician Belgian Police

uPain

Past

Tabel 1: Totale gezondheidszorguitgaven (Per capita US$ PPP), geselecteerde jaren.

	1960	1970	1980	1985	1990	1995	2000	2001	2002
Australië	93		684	994	1300	1737	2379	2504	
België		147	627	953	1340	1882	2288	2441	2515
Canada	121	289	770	1251	1714	2044	2541	2743	2931
Denemarken			943	1275	1554	1843	2351	2523	2580
Duitsland		266	955	1375	1729	2263	2640	2735	2817
Finland	62	190	584	954	1414	1428	1698	1841	1943
Frankrijk	69	206	699	1110	1555	2025	2416	2588	2736
Griekenland		171	464		838	1269	1617	1670	1814
Hongarije						674	847	961	1079
Ierland	42	117	511	657	791	1208	1774	2059	2367
Ijsland	57	163	698	1120	1598	1853	2559	2680	2807
Italië					1397	1524	2001	2107	2166
Japan	29	144	559	849	1105	1530	1958	2077	
Korea				169	328	500	778	931	
Luxemburg		161	637	913	1533	2053	2682	2900	3065
Mexico					290	380	493	535	553
Nederland			750	973	1419	1827	2196	2455	2643
Nieuw-Zeeland		205	488	622	987	1238	1611	1710	1857
Noorwegen	49	140	659	943	1385	1892	2747	2946	3083
Oostenrijk	77	190	762	916	1344	1865	2147	2174	2220
Polen					298	423	578	629	654
Portugal		54	283	421	661	1080	1570	1662	1702
Slovakije							591	633	698
Spanje	16	97	363	491	865	1195	1493	1567	1646
Tsjechië					553	876	977	1083	1118
Turkije		24	76	72	165	184	446		
Verenigd Koninkrijk	84	160	472	709	977	1393	1839	2012	2160
Verenigde Staten	144	347	1055	1759	2738	3655	4538	4869	5267
Zweden		305	924	1247	1566	1733	2243	2370	2517
Zwitserland	166	350	1031	1473	2040	2555	3111	3288	3445

Bron: OECD HEALTH DATA , 2004, 1st edition

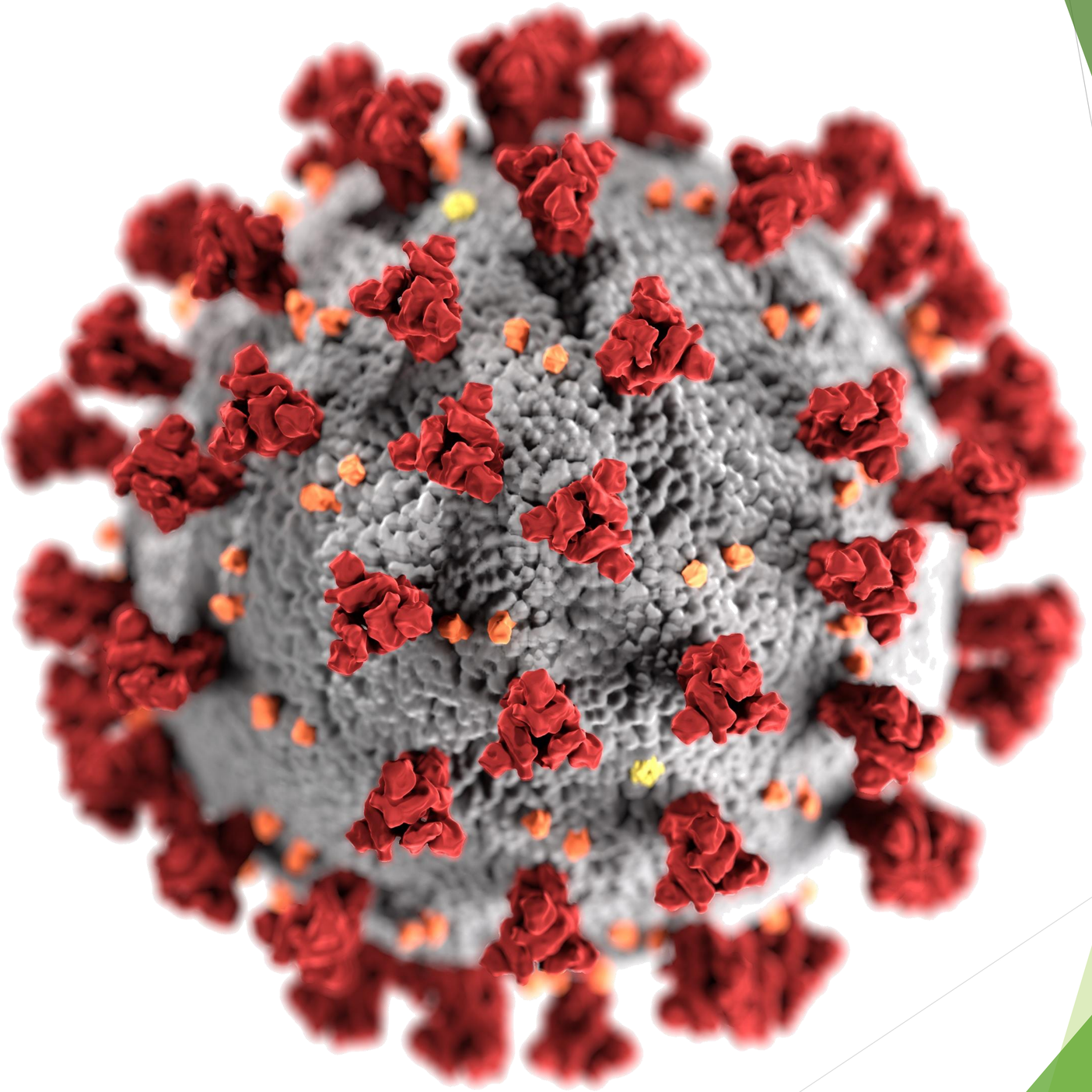
Past

Tabel 2: Totale gezondheidszorguitgaven in % van het BBP, geselecteerde jaren.

	1960	1970	1980	1985	1990	1995	2000	2001	2002
Australië	4.1		7	7.4	7.8	8.2	9	9.1	
België		4	6.4	7.2	7.4	8.7	8.8	9	9.1
Canada	5.1	7	7.1	8.2	9	9.2	8.9	9.4	9.6
Denemarken			9.1	8.7	8.5	8.2	8.4	8.6	8.8
Duitsland		6.2	8.7	9	8.5	10.6	10.6	10.8	10.9
Finland	3.8	5.6	6.4	7.2	7.8	7.5	6.7	7	7.3
Frankrijk	3.8	5.4	7.1	8.2	8.6	9.5	9.3	9.4	9.7
Griekenland		6.1	6.6		7.4	9.6	9.7	9.4	9.5
Hongarije						7.5	7.1	7.4	7.8
Ierland	3.7	5.1	8.4	7.6	6.1	6.8	6.4	6.9	7.3
Ijsland	3	4.7	6.2	7.3	8	8.4	9.2	9.2	9.9
Italië					8	7.4	8.1	8.3	8.5
Japan	3	4.5	6.5	6.7	5.9	6.8	7.6	7.8	
Korea				4	4.4	4.4	5.1	5.9	
Luxemburg		3.6	5.9	5.9	6.1	6.4	5.5	5.9	6.2
Mexico					4.8	5.6	5.6	6	6.1
Nederland			7.5	7.4	8	8.4	8.2	8.5	9.1
Nieuw-Zeeland		5.1	5.9	5.2	6.9	7.2	7.9	8	8.5
Noorwegen	2.9	4.4	7	6.6	7.7	7.9	7.7	8.1	8.7
Oostenrijk	4.3	5.3	7.6	6.6	7.1	8.2	7.7	7.6	7.7
Polen					4.9	5.6	5.7	6	6.1
Portugal		2.6	5.6	6	6.2	8.2	9.2	9.3	9.3
Slovakije							5.5	5.6	5.7
Spanje	1.5	3.6	5.4	5.5	6.7	7.6	7.5	7.5	7.6
Tsjechië					5	7.3	7.1	7.3	7.4
Turkije		2.4	3.3	2.2	3.6	3.4	6.6		
Verenigd Koninkrijk	3.9	4.5	5.6	5.9	6	7	7.3	7.5	7.7
Verenigde Staten	5	6.9	8.7	10	11.9	13.3	13.1	13.9	14.6
Zweden		6.9	9.1	8.7	8.4	8.1	8.4	8.8	9.2
Zwitserland	4.9	5.4	7.3	7.7	8.3	9.7	10.4	10.9	11.2

Bron: OECD HEALTH DATA , 2004, 1st edition

Present



Belgium ranking healthy life years: place 8 1990 > place 15 2016

Preventable causes: eating unhealthy, smoking, alcohol, air pollution, not enough movement,

Ranking drop > lower respiratory infections, chronic obstructive pulmonary diseases and lung cancer

uManagement questions

Can a Second Opinion be a tool to offer **more appropriate tailor-made care for each patient**?

Can a Second opinion be an added value in the context of low back operations, with more efficient care and **better management of the health care budget**?

ROYAL DOCTORS

uSecond Opinions

- Physical Second Opinion
- Virtual Second Opinion

Second Opinion Effects:

- Confirmation of diagnosis/treatment
- Optimization
  - Overuse
  - Underuse
- Avoiding misdiagnosis/no diagnosis

Economic potential

- Potential market size
  - 7,12 billion USD by 2025
  - 9,75 billion USD by 2027

Research

- Meyer et al:
  - 15% change in diagnosis
  - 37% change in treatment
  - 10,6% changes in both
- Lenza et al (485 patients): 60% change in diagnosis
  - 33,6% surgery (15,5% same type of surgery)
  - 55,3% (!) conservative instead of surgery
  - 11,1% (!) no spinal condition

Research

- Schmueli et al:
  - 56% change in diagnosis or treatment
  - 91% preference patient for second opinion
- Van Such et al:
  - 12% diagnosis stayed the same
  - 66% better defined/redefined
  - 21% different diagnosis

Research

- Literature = more overuse than underuse = hypothesis

uMethodology

Comparison literature vs Royal Doctors Data

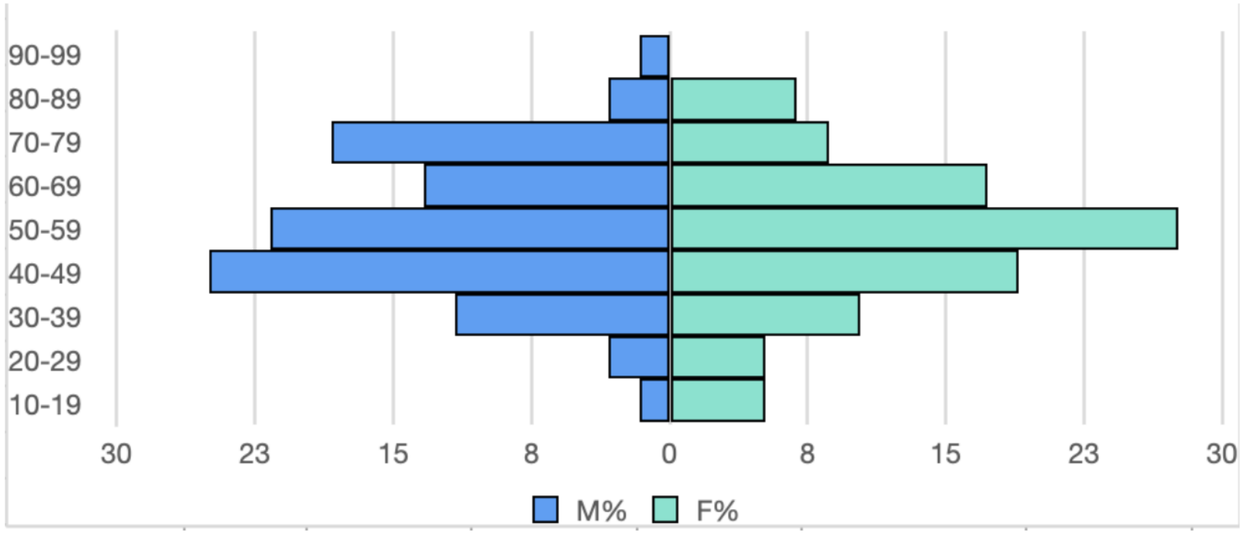
by

Creation of dataset low back pain problems referred to neurosurgeon 2017 - medio 2021

Gender
Age
Initial diagnosis
Diagnosis confirmed yes or no
If not confirmed, what change in trajectory

- Activity based costing framework
  - Non-surgical conservative trajectory
  - Invasive surgical trajectory
- Time-driven not possible
  - No long-term financial data available

uResults & discussion



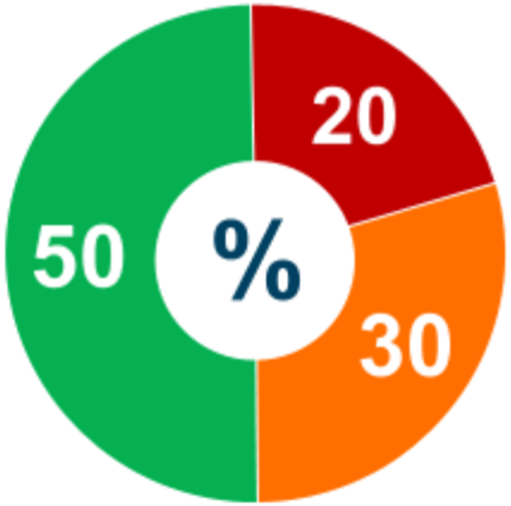
u117 patient files analyzed 2017 - medio 2021

Royal Doctors

Resultaat: 100% impact!

Diagnose = OK
Behandeling = OK
[bron: 1- 3]

-> Advies tot starten van de behandeling: 200% zekerheid



Diagnose ≠ OK
Behandeling ≠ OK
(misdiagnose)
[bron: 2 - 3 - 4 - 5 - 9]

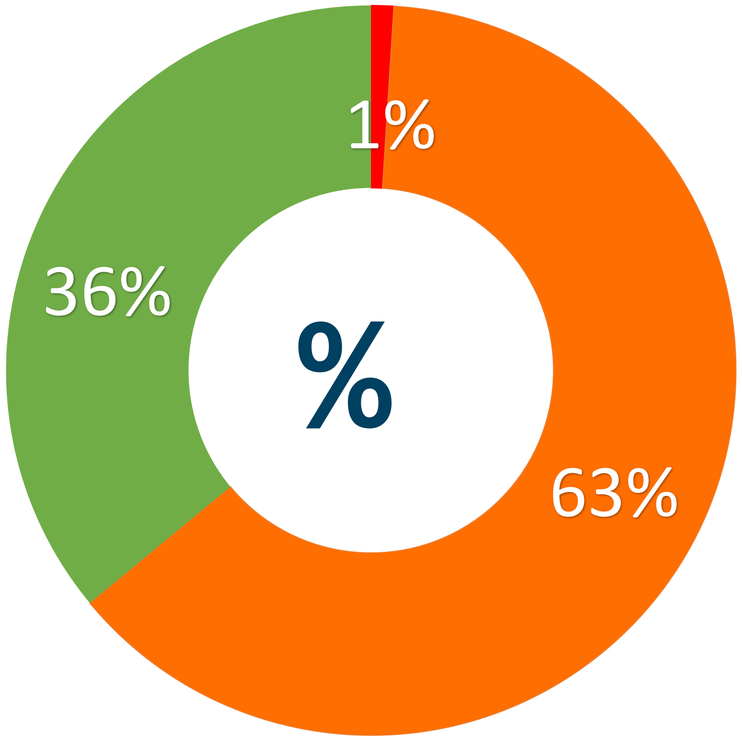
-> Heroriëntatie van het dossier

Diagnose = OK
Behandeling ≠ OK
[bron: 2 - 4 - 6]

-> Advies tot belangrijke aanpassing van het behandelplan!!!

KIAP

Diagnosis = OK
Treatment plan = OK



Diagnosis ≠ OK
Treatment plan ≠ OK
(misdiagnosis)

Diagnosis = OK
Treatment plan ≠ OK

1/117 = misdiagnosis

74/117 = diagnosis ok, treatment not ok

42/117 = diagnosis & treatment ok

Hypothesis based on literature = overuse

Our database = underuse!

74/117 cases diagnosis ok, treatment not ok

-35/74 cases: nothing > non-invasive therapy
-24/74 cases: non-invasive > surgery

+- 80 %

-15/74 cases: surgery > non-invasive

+- 20 %

Spending more a good thing?

- Absenteism
- Dead-end
- Faster return to wok

Absenteism

- Securex study on absenteeism from 2017

- Cost 1d absenteeism = 8,6 percent gross wage employee (including extra holiday pay, the year-end bonus and employer’s fare)

- Average wage Belgian worker in 2017 = 2604 euro, for servant = 3988 euro.

- 1 day absenteeism:
  - 207 euro for a worker
  - 337 euro for a servant

- Conservative calculation = worker = 207 euro

- Literature = average low back pain patient on a conservative pathway = absenteeism 18 days = 3726 euro

- Surgery (surgeon) = 3 - 6 months absenteeism = conservative calculation 3 months = 18630 euro

- Lumbar interbody fusion most frequently adapted to conservative trajectory

> ABC

	Royal Doctors office			**Physician**			**Royal Doctors office**	
		200 euro						**150 eu**
	Case manager requests medical files with all relevant hospitals and physicians	50					Case manager processes second opinion and checks for spelling mistakes	
	Case manager prepares file for manager responsible for triage	30					Triage manager approves second opinion file	
	Triage manager triages patient to correct physician	30		Physician receives a maximum of 10 days to complete his second opinion	**250 euro fee for physician**		Case manager prints and prepares second opinion for mailing the file via the post office	
	Case manager uploads file to the online workspace	20					Mailing the file via the post office to the patient by the case manager (including the cost of the registered letter)	
	Case manager contacts the attributed physician	20					Payment of the second opinion physician by the case manager	
	Case manager contacts patient	50					Classifying the patient file by the case manager	
	Cost attributed to expanding physician network	**50**						
	IT cost	**10**						
					Total Royal Doctors	600		
					Total physiotherapy	234		
					Total infiltration	10		
					Total absenteism	3726		
					Follow-up consultation with GP	27,25		
					Total conservative trajectory	**4597,25**	**Euro**	

Activity based costing Royal Doctors

		Diagnostics			**Admission & surgery**		**Follow-up**		
					Bed day				
					Ward round				
		Visit to the neurosurgeon	27,25		Anesthesia		Neurosurgeon visit	27,25	
Referral to a neurosurgeon after which the decision for surgery is made		Pre-operative anesthesiology consultation	27,25		Post-operative imaging		Imaging post-operative	10	
		Preoperative examination (blood sample + ECG)	40		Utensils for anesthesia				
					Urine cauterization before operation				
		TOTAL	94,5		Utensils for surgery		TOTAL	37,25	Euro
					Nurse for ward				
					Preparation of operating room				
					Nurse for transport to operating room and back				
					Cleaning of the operating room				
					Standard laboratory tests				
					TOTAL hospital	393	Euro		
					Total surgery trajectory	867,86754	Euro		
					Total surgery trajectory	1392,61754			
					Total physiotherapy	234			
					Total absenteism	18630			
					Follow-up consultation with GP	27,25			
					Total conservative trajectory	**20283,86754**			

Activity based costing Lumbar interbody fusion

- Cui et al. (2021) financial calculation ‘saved’ surgical consults > 10832 referrals were first triaged online > 3718 of those patients were deemed not to have an indication for surgical intervention.

- Only for the surgical consult alone this was a saving of almost 800000 dollar.

Lack of long-term follow up

Financially & clinical outcome

A 16-year-old motocross rider which has crashed and suffered back trauma.

Situation

The doctors diagnosed an injury at the cervical level of C3-C4 and wished to proceed with an operation. The father, however, wished to have a second opinion performed first.

Advice

The second opinion report revealed that surgery was not necessary. The injury at level C3-C4 appeared to be a crack requiring head and neck traction for 1 week and a HALO brace to be worn for 6 weeks. But no surgery was needed.

A halo-vest is a brace that is used to immobilize and protect the cervical spine and neck after surgery or accident. The halo is a ring that surround the head and is attached by pins to the outer portion of the skull.

Consequence + impact

After 6 months there was as complete recovery, without surgery. The disadvantages of an operation were avoided (surgery risk, a possible repeat operation, complications, etcetera…). The rehabilitation process is the same, but without the adverse consequences of surgery.

uAnalysis

- Second Opinion = incomplete golden standard
- Most value = both physicians agree

Literature = overuse = decreasing cost by lowering surgery

Our dataset = underuse = decreasing cost by lowering absenteeism

- The Netherlands versus Belgium
- KCE guidelines
- Financial interests

uLimitations

- No long-term follow-up of patients (dataset nor literature)
  - Clinical outcome
  - Financial
- No control group, only patients that asked a second opinion
  - No condition probability framework
  - Solely conjectures
- Dutch patients versus Belgian financial data

- Selection bias low back patients (reason for over vs underuse?)
- No influence on preventive healthcare
- Government reimbursement data not incorporated
- No physical second opinion
- One reviewer: possible misclassification error

uRecap

Can the Second Opinion be a tool to offer more appropriate tailor-made care for each patient?

- Patients become aware that different treatments exist
- Added value for the primary physician
- Shared choice making patient - physician

Can the Second Opinion be an added value in the context of back operations, more efficient care and better management of health care budget

- Literature = overuse = decreasing cost by lowering surgery
- Our dataset = underuse = decreasing cost by lowering absenteeism
- Financial conflict
- Clinical guidelines
- Decrease absenteism

uConclusion

- No definitive answer
- Based on current literature & results implementation is advisable BUT
- Future study with a long term clinical follow-up and cost follow-up is needed to give definite answer!

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Thank you

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