

Available online at www.sciencerepository.org

Science Repository



Research Article

Introducing Rapid Change Escalades to Adjust Organisational Issues in Clinical Practice

Gerit Kulik^{1*}, Daniele Paccaud², Laurie Perey², Mario Hamelin², Eva Renon², Siheme Zougagh², Anne Nowicki², Alexandre Lopes-Freire², Lorry Duchoud², Eric Damian², Kaba Cissoko², Julien Chevalley², Frédéric Cartiser² and Christian Simon²

¹Medical Directorate, Lausanne University Hospital, Lausanne, Switzerland

²Department of Otolaryngology, Head and Neck Surgery, Lausanne University Hospital, Lausanne, Switzerland

ARTICLE INFO

Article history:

Received: 16 July, 2021

Accepted: 2 August, 2021

Published: 30 August, 2021

Keywords:

Workload

triage

absenteeism

process optimisation

waiting rooms

resource utilisation

nurse-physician collaboration

ABSTRACT

Background: Running clinical facilities implies facing many challenges, as neat time management and fluid care processes. A method that warrants small changes and an interconnected and collaborative proceeding is convenient for adjusting clinical processes and avoiding unwanted side effects. From an organizational perspective, a smooth clinical process translates also into a levelled occupation of team members as reflected by over-time and absenteeism.

Methods: The policlinic nurse team introduced weekly mini-huddles of maximum 15 minutes to discuss work organizational issues, with structured access to collaborating professionals and their hierarchies. The team selected the topic of patients presenting without a planned appointment. Nurse's over-time stock and absenteeism were assessed before and after the intervention.

Results: The clinical process had six steps, of which the patient's waiting room period was transformed into a nurse's evaluation and triage period followed by a transmission note to the physician. The new process decreased the average stock of nurse's team over-time from 65.5 to 46.8 hours (-29%), and the nurse's absenteeism from 4.6 % to 1.97 % (-57%).

Conclusion: By cautious and collaborative proceeding, and the choice of an earnest issue by front nurses, we levelled the nurse's workload and pleased patients and professional teams.

© 2021 Gerit Kulik. Hosting by Science Repository.

Introduction

In hospital organizational terms, timely and smooth patient management is not only reflected by patient's satisfaction, but also by employee's satisfaction as they are concerned about resource utilisation, unnecessary waiting imposed to patients, difficulties in transmission, and availability of colleagues [1-4]. This satisfaction bounces back to the teams, influences its overall well-being and efficiency, and therefore deserves careful attention, often unfolding over time [5-14]. Enthusiasm for organizational change is often present, especially if the targeted improvement is well defined. Eventually, success of implementation and obtained results are often lagging behind initial intentions [15-20]. This

reality is linked with the complexity of hospital systems with their numerous interfaces and interstations in the patient's journey, and common pitfalls inherent to a project life cycle even independent of the hospital setting [12, 19-26]. Different redirections, as the publication of new protocols and standards, or new legislative requirements, add a permanent source of perturbations to an organizational change process [27]. Hence, exploring swift robust ways of achieving dextrous and lasting adjustments of clinical organization is mandatory or recommended [18, 19, 28-34]. Our goal was to experiment with an organizational change practice that would take little time and effort for the team when attempting to improve a collaborative patient care process.

*Correspondence to: Gerit Kulik, Medical Directorate, Lausanne University Hospital, DOCD, Rue du Bugnon 21, 1110, Lausanne, Switzerland; E-mail: Gerit.Kulik@chuv.ch

The focus of this article is not the content of the clinical change itself, but the economic and sustainable way by which dissatisfaction was addressed and a transfer of physician's responsibility to nurses was achieved in a short lap of time. The local problem worked concerns the organization of care given to non-scheduled patients that arrive at the outpatient clinic in a prompt but not vital need of care.

Materials and Methods

I Clinical Unit

The clinical unit is part of the ENT department, which in turn belongs to our tertiary teaching hospital's surgery department. The outpatient section of the ENT clinic has a volume of 15312 annual patient visits. A dedicated nurse team assists physicians during outpatient visits in the policlinic and has an activity of its own (2600 visits per year), for example for post-surgery care like removing stitches or changing bandages. This nurse team is attached to a chief nurse directing three policlinics in the surgery department.

II Team and Approach

The entire nurse team is composed of a head nurse, two staff nurses, two nurse assistants, partially two nurse students, and all participated in the mini-huddles. The huddles focussed on follow-up of ongoing change initiatives or the discussion of new issues. There was, for example the distribution of tasks for treating an issue: determining who is collecting which data, who is going to contact another member of the policlinic. The huddle is animated and concluded by the chief nurse or head nurse but otherwise very democratic as any nurse staff member was equally

invited and active to propose and discuss. The policlinic's team of secretaries and the ENT clinic physicians were not involved on a regular basis but solicited occasionally (see section "project phases"). The trial was accompanied by an expert in operation management and process (OMP) improvement. The head of the ENT clinic, the chief nurse as well as the head of ENT clinic administration gave their consent, adhesion and support throughout the trial. Care was taken to keep the head of secretaries' team and the chief nurse informed by informal quick exchanges. The head of ENT clinic was formally contacted three times, once for approving starting the trial, once for presenting the solution and requesting approval of its application, and once for presenting the results. The head of ENT clinic ensured that physicians be informed about the existence of the nurse's trial. The final version of the new document that became part of new patient care process was shared with whole administrative (via the head of administrative team) and physician's team (via the referent physician). Since the whole nurse team participated, no further communication effort was necessary.

III Project Phases

The very first nurse's mini-huddle took place in November 2018. The first few weeks were devoted to assimilate the principles, figure out its mechanisms, and get some practice by making the first improvement actions concerning mostly the nurse's team only. The trial described in this article was the first improvement action of a large scale since it implied the involvement of two other professions, the administrative team of the outpatient desk and the physician's team (Table 1). This trial was the largest however, only one amongst other initiatives treated by the nurse team in the mini-huddles. Since the beginning of the nurse mini huddles, 25 initiatives were undertaken, and 14 of them finished by now.

Table 1: The timeline of the intervention preparation.

M O N I T I N G	March 21 st 2019	First mention of problem dealing with patients presenting to the policlinic without prior appointment	Nurse huddle
	March 28 th 2019	Process modulation and discussion of the triage sheet (notes taken by head of group nurse): chief nurse, referent physician, head of group nurse, OPM expert	One-hour meeting
	April 16 th 2019	Draft of triage sheet and written procedure (head of group nurse)	Email
	May 1 st 2019	Corrections to triage sheet and written procedure (referent physician)	Email
	May 8 th 2019	Communication to physician senior meeting	Oral communication
	May 13 th 2019	Finalisation of triage sheet (referent physician and head of group nurse)	2 emails
		Exchange and setting up practical issues with head of administrative team	Oral communication, Administrative team huddle
	May 17 th 2019	Final communication to outpatient desk confirming the launch of new process (head of group nurse to head of group desk)	Email
	May 21 st 2019	Start of the new process	Total effort: 1 nurse huddle 1 admin. team huddle 1 1h meeting 5 emails 2 oral communications

IV Clinical Process

The old process had two main problems (Figure 1). [1] When the patient arrived at the desk, the physician on-call was informed. The delay until arrival of the on-call physician regularly created important waiting time for the patient, for example when the physician was in the operation

theatre. [2] It regularly occurred as well that several patients were presenting without appointment. The physician on-call had to spend time upon his arrival for the patient assessment in order to decide which patient should be seen first.

Patients presenting without appointment: old process

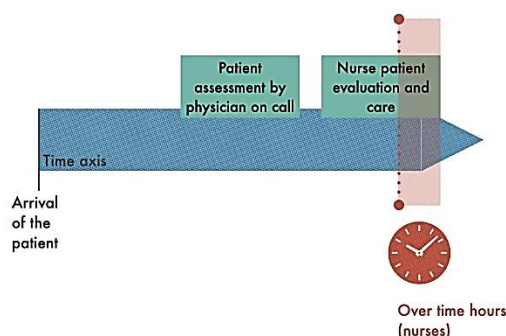


Figure 1: The clinical process of patients arriving at the ENT outpatient clinic in the need of prompt but not vital care, often being announced by their treating physician the same day and therefore not having a scheduled time slot within the outpatient clinic. Process before the intervention. Not scheduled patients are seen by the physician on call. Dissatisfaction arose from waiting for the physician on call, and from creation of nurse's overhours secondary to the waiting.

Patients presenting without appointment: new process

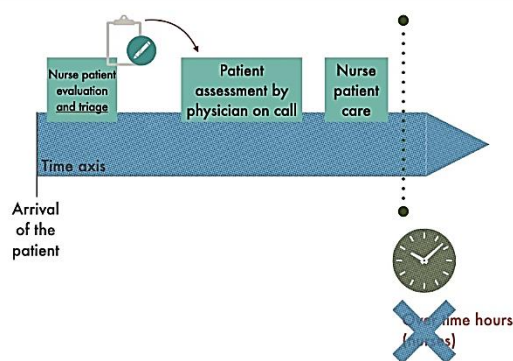


Figure 2: The clinical process after the intervention. The nurse involvement was split into "Nurse evaluation", placed before the physician on call arrival, and "Nurse care" to carry out the doctor's advice and prescriptions. Nurse evaluation was completed by a patient triage. A newly created triage transmission sheet was exposed in the nurse's office and was consulted by the physician on call on his arrival. This sheet provided a rapid assessment and helped to prioritise between often multiple patients present.

Two adjustments of the process were undertaken, responding to both main problems of the process (Figure 2). i) Upon patient arrival, in addition to the physician on-call, the nurse team was also informed. Rapidly, a nurse or nurse assistant went to see the patient, assessing the patient. ii) The patient information to be collected and the criteria for patient triage were agreed with the referent physician beforehand and settled on a triage document to be used. These triage sheets were a new element introduced through this process adjustment. The sheets were attached to the wall in the nurse's office and clearly marked with order of priority. At his arrival, the physician on-call went to the nurse's office to fetch the triage sheets, run through them to confirm (or revise) the order of priority and then address the patient of first priority. As a result, the nurse's work part was cut into two pieces, allowing them to execute

their autonomous nurse evaluation before the arrival of the physician (instead of after the physician visit). The triage of patients as a result of this nurse evaluation was new item to this process. The second part of the nurse's work was after the physician's visit and was done as before the intervention. Thus, the duration of nurse's intervention did not really change, but the part of the nurse work that is independent from the physician's appreciation of the patient was displaced forward in time and allowed the nurses to finish their day earlier (that means without creating over hours).

V Measurement, Data Processing and Outcomes

The following data were collected: overall nurse's clinical activity volume (number of patient visits), unplanned clinical activity volume (number of patients presenting without appointment), stock of over-time (number of hours remaining at the end of the month after compensation leaves), rate of absenteeism. Nontangible appreciation and collaborator satisfaction and patient complaints expressed at the desk or to nurses was collected by staff interviewing.

The quantitative analysis of clinical activity volume, stock of over-time hours and rate of absenteeism from January through May 2019 provided a baseline value. The period of June through December 2019 was used to evaluate the impact of the intervention (post-intervention process). All consecutive patients presenting without appointment at the ENT polyclinic were included. The primary outcome measure was the average rate of absenteeism, in percent. The secondary outcome measure was the stock of over-time, and team's appreciation.

Results

Patients may present from Monday through Friday. A total of 2600 patient visits with nurse involvement were included (1011 visits from January to May 2019; 1589 visits from June to December 2019). Of those, 285 visits and 417 visits, respectively, were patients presenting without an appointment. This corresponds to an average of 57 and 60 visits per month, respectively, a 5% increase between the two periods.

The intervention was well prepared during two weekly mini-huddles, of which the chief nurse was invited to the second one. The involvement of the two other collaborating professions could be limited to one meeting with the head of administrative team, one meeting with the referent physician followed by three emails settling the triage sheet and procedure, and a quick exchange of the nurses with the administrative team to decide on practical issues. The administrative team checked the proposition for problems in one of their weekly mini-huddles.

Team satisfaction increased in all professions. None of the professional groups did encounter any difficulty with the new procedure. The administrative team occupying the outpatient desk and overviewing the waiting area had to deal with fewer patient reclamations. Nurses much enjoyed patient's appreciation of the nurse's expeditiously assessment and care on patient's arrival. Patients had practically no waiting time upon their arrival. Nurses could finish part of their job before the physician's assessment, be anticipative and were therefore less occupied after the physician's assessment, where they merely executed physician's orders. By this forward shift of the nurse's occupation, they were able to finish their day with fewer over-time hours, which in turn

had direct positive feedback on the entire nurse team. Physicians appreciated the nurse's patient evaluation and triage, availability of needful information and nurse's anticipative actions.

With the new process, the accumulated average stock of over-time hours decreased by 30% and the average rate of absenteeism by almost 60% (Figures 3 & 4). The weekly mini-huddles were continued all along the trial and thereafter. No further adjustment of the process was necessary, and the new procedure was quickly adopted.

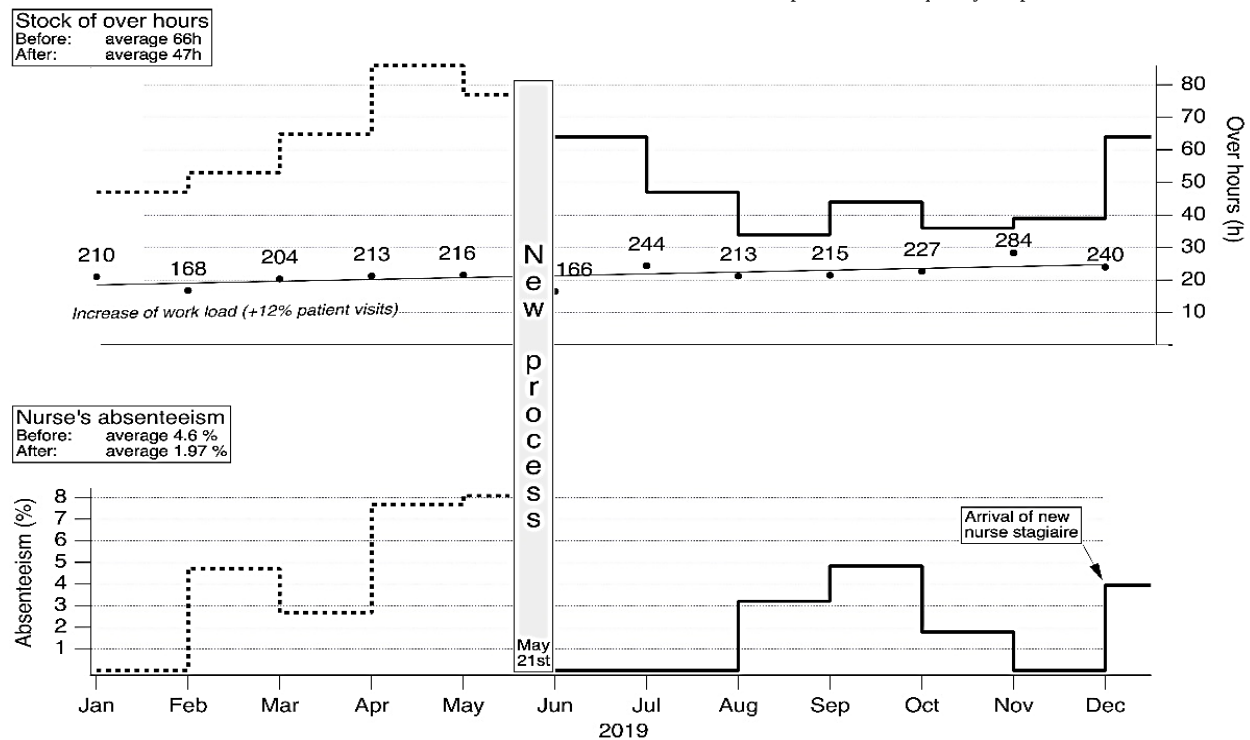


Figure 3: Results of the intervention: evolution of observed outcomes over the intervention period. The nurse team managed to reduce over hour stock despite of steadily more patients arriving per month in the clinic and thus raising workload. General satisfaction of nurse team increased and is reflected in the decreasing absenteeism. Raising over hours in December are related to the teaching of a new junior nurse. Values in boxes are average values.

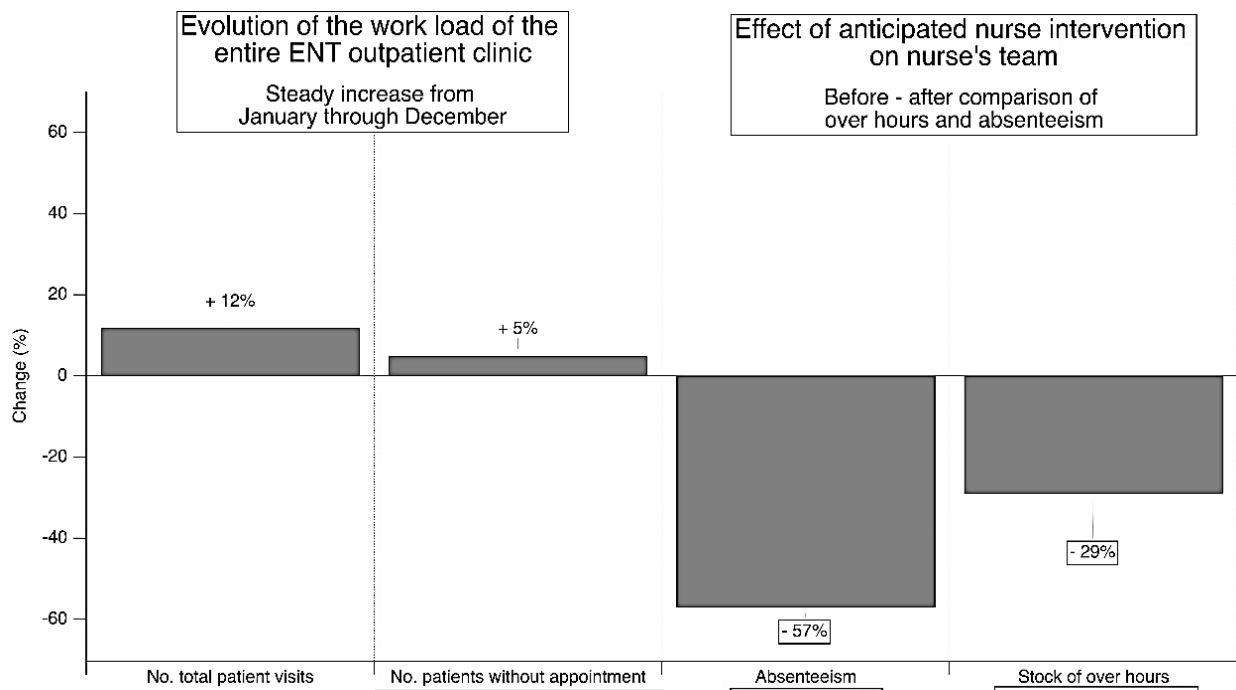


Figure 4: Before-after comparison of studied outcomes of the intervention, showing the average values of absenteeism and over hours stock over the entire comparative and experimental periods.

Discussion

I Statement of Principal Findings

We successfully experimented with an organizational change practice that would take little time and effort for the team when attempting to improve a collaborative patient care process.

II Interpretation within the Context of the Wider Literature

To the best of our knowledge, there is no report on a method of quick improvement measures that are universal and robust enough to apply to the whole hospital context, to detailed process analysis and improvement, handling chained initiatives as well as introducing change across different professions [18, 20, 29, 35-37]. Grimshaw *et al.* stated in his work “that despite 30 years of research in this area, we still lack a robust, generalisable evidence base to inform decisions about strategies to promote the introduction of guidelines or other evidence-based messages into practice” [28]. That was in 2004, and progress has been made, like Braithwaite’s call for considering complexity science and UK NHS member’s efforts to engineer better care in 2017 [24, 31, 38-40]. We reported a deep interprofessional process analysis on discharge letters earlier, where the focus was on finding root causes for a broken process and to come up with new ideas to remedy it across professions [41]. The presented case was successful and of larger scale, asking for the determination of a project team to work on the discharge letter process.

Here, we tried a method involving the whole team and solving relatively easy but important issues. We abstracted the idea of discussing organizational issues during the daily clinical huddles to dedicating a mini-huddle once a week to organizational issues. It is embedded into the possibility of escalating for a structured access to chiefs and heads of other professional groups [42]. This ensures to keep simple and treat matters at their organizational level within respective circle of autonomy and to have easy and defined access to next organizational level in case the matter exceeds own team or unit decision level. This approach recognises the complexity of even small organizational changes and is open to interaction with any profession in the hospital or central services. The importance of decentralisation was pointed out by West *et al.*, and of leadership at all levels by Ferlie *et al.* [21, 43]. We also paid much attention to regularity and to not to exceed 15 minutes. The regularity ensures a follow-up and that processes are not forgotten in the speedy daily business, and the respect of 15 minutes duration cheers adherence to the habit [37]. By now, these mini-huddles processed twenty matters in the nurse’s team and twelve in the administrative team, most of them being already completed.

Generally, an improved interprofessional collaboration and team dynamics was perceived and appreciated. Patient management, clinical reasoning and decision making as well as well-defined roles are the core of nurse-physician collaboration [44]. They found good support through this initiative and helped the team to move forward and experience common goal setting [45, 46]. This improvement action needed no further attention and both nurses and administrative team discussed other matters during their weekly mini-huddles. The way of proceeding by mini-huddles and selective meetings was well accepted because subjects were prepared, information transparent and profession’s responsibilities

respected. Trust was built through this proceeding, and residents adopted the new procedure quickly, even though only their referent physician was actively participating in the development of the triage sheet. Chiefs and teams were easily accessible to each other. Launching the system of mini-huddles in nurses and administrative team facilitated their interprofessional exchanges and collaboration for organizational issues. This was helpful for responding quickly and keep control.

The habit of the mini-huddles might have helped the nurse team absorb two realities: i) an increase of five percent in the clinical work load related to increased number of patients, and ii) the departure of the head nurse at the end of October 2019 due to evolving professional plans. For a transitory period, the nurse team remained without formal head for the rest of the trial, due to the delayed arrival of a new head nurse for administrative reasons. Nurse team was staffed with a new nurse, who arrived in December 2019. The nurse team had the possibility to address issues related to this change during this mini-huddles, especially because the chief nurse participated every second week.

As an outlook, it will be worthwhile to close the quality circle loop and manage the new process as a procedure by revising, updating and archiving. After streamlining a few more organizational issues, thereby saving some time, such task may be attributed to one member of the nurse’s team. Another desired evolution would be extending the mini-huddle’s habit to the physicians. For the moment they do not have a mini-huddle of their own, but are readily available for requests from nurse or administrative staff as shown in this example.

III Strengths and Limitations

A strength of the presented study is its real-life character. From the early beginning, the initiative was run as a new current activity of the team, and not as a ‘project’ having a beginning and an end. Accountability and organization of emails, meetings and documents was carried by the team and not by the accompanying expert.

A limitation of this study is that we did not formally assess the level of satisfaction of patients and staff, as is sometimes requested for approval of the introduction of a permanent change at the end of an improvement project [47]. We had no available time. As patient’s and staff’s satisfaction were however rather evident, we decided not to investigate further this fairly complex domain [48-52]. Staff’s satisfaction was backed by their wish to continue mini-huddles because they achieved real change, promoting interprofessional collaboration and giving them a voice.

Evidently, absenteeism is a multifactorial phenomenon and hardly depending on a single intervention. Here we have however indications that make confident to associate the positive effects to the huddles and the intervention. The combination of evident staff satisfaction, the stock of over hours that fell the spite that more work was done over the year, the absorption of additional issues related to the rotation of medical staff, overcoming the departure of the head nurse that was not replaced (and that was known), the lack of other interventions that could contribute to the result and the weekly accompaniment during more than a year of the small team give rise to thoughtful interpretation and appreciation of the results.

Conclusion

We were able to improve the working conditions within a complex environment, without additional resources and taking little time to collaborate, by choosing a sensitive topic and adapted method.

Acknowledgement

Many thanks to JB Wasserfallen and M Roth-Kleiner for their attentive reading of the manuscript and reasoned suggestions. The SQUIRE reporting guideline (Qual Saf Health Care. 2008; 17 Suppl 1: i13-32. PMID: 18836062).

Ethics and Other Permissions

There were not any permissions needed to undertake this work.

Conflicts of Interest

None.

Data Availability

The data underlying this article are available in the article.

Funding

None.

REFERENCES

- Fan VS, Burman M, McDonell MB, Fihn SD (2005) Continuity of care and other determinants of patient satisfaction with primary care. *J Gen Intern Med* 20: 226-233. [[Crossref](#)]
- Batbaatar E, Dorjdagva J, Luvsannyam A, Savino MM, Amenta P (2017) Determinants of patient satisfaction: a systematic review. *Perspect Public Health* 137: 89-101. [[Crossref](#)]
- Rosenbusch J, Ismail I, Ringle CM (2018) The agony of choice for medical tourists: a patient satisfaction index model. *J Hospital Tourism Technol* 9.
- Alarcon Ruiz CA, Heredia P, Taype Rondan A (2019) Association of waiting and consultation time with patient satisfaction: secondary-data analysis of a national survey in Peruvian ambulatory care facilities. *BMC Health Serv Res* 19: 439. [[Crossref](#)]
- Krogstad U, Hofoss D, Veenstra M, Hjortdahl P (2006) Predictors of job satisfaction among doctors, nurses and auxiliaries in Norwegian hospitals: relevance for micro unit culture. *Hum Resour Health* 4: 3. [[Crossref](#)]
- Sutinen R, Kivimäki M, Elovainio M, Forma P (2007) Associations between stress at work and attitudes towards retirement in hospital physicians. *Work Stress* 19: 177-185.
- Martin JS, Ummenhofer W, Manser T, Spirig R (2010) Interprofessional collaboration among nurses and physicians: making a difference in patient outcome. *Swiss Med Wkly* 140: w13062. [[Crossref](#)]
- Van Bogaert P, Clarke S, Roelant E, Meulemans H, Van de Heyning P (2010) Impacts of unit-level nurse practice environment and burnout on nurse-reported outcomes: a multilevel modelling approach. *J Clin Nurs* 19: 1664-1674. [[Crossref](#)]
- Aiken LH, Sloane DM, Clarke S, Poghosyan L, Cho E et al. (2011) Importance of work environments on hospital outcomes in nine countries. *Int J Qual Health Care* 23: 357-364. [[Crossref](#)]
- Klopper HC, Coetzee SK, Pretorius R, Bester P (2012) Practice environment, job satisfaction and burnout of critical care nurses in South Africa. *J Nurs Manag* 20: 685-695. [[Crossref](#)]
- Weigl M, Müller A, Vincent C, Angerer P, Sevdalis N (2012) The association of workflow interruptions and hospital doctors workload: a prospective observational study. *BMJ Qual Safety* 21: 399-407. [[Crossref](#)]
- Pinto JK, Prescott JE (2016) Variations in Critical Success Factors Over the Stages in the Project Life Cycle. *J Manag* 14: 5-18.
- Galletta M, Portoghese I, Carta MG, D'Aloja E, Campagna M (2016) The Effect of Nurse-Physician Collaboration on Job Satisfaction, Team Commitment, and Turnover Intention in Nurses. *Res Nurs Health* 39: 375-385. [[Crossref](#)]
- Welp A, Meier LL, Manser T (2016) The interplay between teamwork, clinicians' emotional exhaustion, and clinician-rated patient safety: a longitudinal study. *Crit Care* 20: 110. [[Crossref](#)]
- Tucker AL, Nembhard IM, Edmondson AC (2007) Implementing New Practices: An Empirical Study of Organizational Learning in Hospital Intensive Care Units. *Manag Sci* 53: 894-907.
- Kanai Pak M, Aiken LH, Sloane DM, Poghosyan L (2008) Poor work environments and nurse inexperience are associated with burnout, job dissatisfaction and quality deficits in Japanese hospitals. *J Clin Nurs* 17: 3324-3329. [[Crossref](#)]
- Reader TW, Flin R, Mearns K, Cuthbertson BH (2009) Developing a team performance framework for the intensive care unit. *Crit Care Med* 37: 1787-1793. [[Crossref](#)]
- Kaplan HC, Brady PW, Dritz MC, Hooper DK, Linam WM et al. (2010) The influence of context on quality improvement success in health care: a systematic review of the literature. *Milbank Q* 88: 500-559. [[Crossref](#)]
- Carland J (2011) An empirical evaluation of hospital project implementation success. 2011: 1-18.
- Taylor MJ, McNicholas C, Nicolay C, Darzi A, Bell D et al. (2014) Systematic review of the application of the plan-do-study-act method to improve quality in healthcare. *BMJ Qual Saf* 23: 290-298. [[Crossref](#)]
- Ferlie EB, Shortell SM (2011) Improving the quality of health care in the United Kingdom and the United States: a framework for change. *Milbank Q* 79: 281-315. [[Crossref](#)]
- Ben Tovim DI, Bassham JE, Bennett DM, Dougherty ML, Martin MA et al. (2008) Redesigning care at the Flinders Medical Centre: clinical process redesign using "lean thinking". *Med J Aust* 188: S27-S31. [[Crossref](#)]
- Brickman J (2016) How to Get Health Care Employees Onboard with Change. *Harvard Bus Rev*.
- Braithwaite J (2018) Changing how we think about healthcare improvement. *BMJ* 361: k2014. [[Crossref](#)]
- Pomare C, Churrua K, Long JC, Ellis LA, Braithwaite J (2019) Organisational change in hospitals: a qualitative case-study of staff perspectives. *BMC Health Serv Res* 19: 840. [[Crossref](#)]
- Dixon Woods M, McNicol S, Martin G (2020) Ten challenges in improving quality in healthcare: lessons from the Health Foundation's programme evaluations and relevant literature. *BMJ Qual Saf* 21: 876-884. [[Crossref](#)]

27. Herzlinger RE (2006) Why innovation in health care is so hard. *Harv Bus Rev* 84: 58-166. [[Crossref](#)]
28. Grimshaw JM (2004) Effectiveness and efficiency of guideline dissemination and implementation strategies. *Health Technol Assess* 8: 1-72. [[Crossref](#)]
29. Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA et al. (2009) Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implement Sci* 4: 50. [[Crossref](#)]
30. Castille K (2011) Implementing change in the NHS: Effects of clinical leadership on performance. *Univ Reading*.
31. Braithwaite J, Churrua K, Ellis LA, Long J, Clay Williams R et al. (2017) Complexity Science in Healthcare – Aspirations, Approaches, Applications and Accomplishments: A White Paper. *Complex Sci Healthcare*.
32. Card AJ (2017) The problem with '5 whys'. *BMJ Qual Saf* 26: 671-677. [[Crossref](#)]
33. Reed JE, Howe C, Doyle C, Bell D (2018) Simple rules for evidence translation in complex systems: A qualitative study. *BMC Med* 16: 92. [[Crossref](#)]
34. Valsamis EM, Sukeik M (2018) Evaluating learning and change in orthopaedics: What is the evidence-base? *World J Orthop* 10: 378-386. [[Crossref](#)]
35. Glover WJ, Farris JA, Van Aken EM (2015) Kaizen Events: Assessing the Existing Literature and Convergence of Practices. *Eng Manag J* 26: 39-61.
36. Eriksson A, Holden RJ, Williamsson A, Dellve L (2016) A Case Study of Three Swedish Hospitals' Strategies for Implementing Lean Production. *Nordic J Working Life Stud* 6: 105.
37. Varley AL, Kripalani S, Spain T, Mixon AS, Acord E et al. (2020) Understanding Factors Influencing Quality Improvement Capacity Among Ambulatory Care Practices Across the MidSouth Region: An Exploratory Qualitative Study. *Qual Manag Health Care* 29: 136-141. [[Crossref](#)]
38. Barratt H, Turner S, Hutchings A, Pizzo E, Hudson E et al. (2017) Mixed methods evaluation of the Getting it Right First Time programme - improvements to NHS orthopaedic care in England: study protocol. *BMC Health Serv Res* 17: 71. [[Crossref](#)]
39. Clarkson J (2017) Engineering better care a systems approach to health and care design and continuous improvement.
40. Braithwaite J, Churrua K, Long JC, Ellis LA, Herkes J (2018) When complexity science meets implementation science: a theoretical and empirical analysis of systems change. *BMC Med* 16: 63. [[Crossref](#)]
41. Burrini R, Cuany B, Valerio M, Jichlinski P, Kulik G (2019) Reduction and follow-up of hospital discharge letter delay using Little's law. *Int J Qual Health Care* 31: 787-792. [[Crossref](#)]
42. Paavola A (2017) Steal this idea: How Intermountain CEO Dr. A. Marc Harrison learns 22 hospitals' pain points by 10:15 A.M. every day at no cost. *Becker's Hospital Rev*.
43. West E (2001) Management matters: the link between hospital organisation and quality of patient care. *Qual Health Care* 10: 40-48. [[Crossref](#)]
44. Muller Juge V, Cullati S, Blondon KS, Hudelson P, Maître F et al. (2013) Interprofessional collaboration on an internal medicine ward: role perceptions and expectations among nurses and residents. *PLoS One* 8: e57570. [[Crossref](#)]
45. Schmutz J, Manser T (2013) Do team processes really have an effect on clinical performance? A systematic literature review. *Br J Anaesth* 110: 529-544. [[Crossref](#)]
46. Baik D, Zierler B (2018) RN Job Satisfaction and Retention After an Interprofessional Team Intervention. *West J Nurs Res* 41: 615-630. [[Crossref](#)]
47. Powell RL, Biernacki PJ (2019) Shared Medical Appointments in Preoperative Joint Replacement: Assessing Patient and Healthcare Member Satisfaction. *J Healthc Qual* 41: 329-336. [[Crossref](#)]
48. Schoenfelder T, Klewer J, Kugler J (2011) Determinants of patient satisfaction: a study among 39 hospitals in an in-patient setting in Germany. *Int J Qual Health Care* 23: 503-509. [[Crossref](#)]
49. Voutilainen A, Pitkääho T, Kvist T, Vehviläinen Julkunen K (2015) How to ask about patient satisfaction? The visual analogue scale is less vulnerable to confounding factors and ceiling effect than a symmetric Likert scale. *J Adv Nurs* 72: 946-957. [[Crossref](#)]
50. Sadovoy MA, Kobayakova OS, Deev IA, Kulikov ES, Tabakaev NA et al. (2017) Patient satisfaction with medical care. *Bull Siberian Med* 16: 152-161.
51. Dunsch F, Evans DK, Macis M, Wang Q (2018) Bias in patient satisfaction surveys: a threat to measuring healthcare quality. *BMJ Glob Health* 3: e000694. [[Crossref](#)]
52. Fryer LK, Nakao K (2020) The Future of Survey Self-report: An experiment contrasting Likert, VAS, Slide, and Swipe touch interfaces. *Front Learning Res* 8: 10-25.