



Prioritizations of individual surgeons' patients waiting for elective procedures: A systematic review and future directions

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ABSTRACT

Context: Infrequent use of tools for surgical patients sequencing results in inappropriate prioritization of patients, waiting days/weeks to have their procedures.

Objective: The aim of this project was to assess the proportion of peer-reviewed papers about the prioritization of elective surgical patients that would consider the prioritization of individual surgeons' patients.

Data sources: OVID MEDLINE, EMBASE, and Web of Science databases were searched for peer-reviewed papers of studies evaluating developed and/or used tools for prioritization of surgical patients. No restriction was placed on publication date or language.

Study design: Systematic review.

Data extraction: Data were extracted into a piloted Microsoft Excel 2015 workbook.

Results: Among the 146 related papers, only one, published by a study author, used prioritization of individual surgeons' patients. The single paper illustrated use of a prioritization tool by each of two individual orthopedic surgeons' patients at a large teaching hospital.

Conclusion: There is a paucity of systematic tools for the prioritization of individual surgeons' patients.

1. Introduction

In some countries such as Canada, surgical patients have relatively long waits to receive medically necessary treatment (e.g., from consultation with a surgeon until the procedure).¹ Waiting times have not become briefer during the recent years.² One reason for long waiting times is an imbalance between demand and availability of scarce resources among hospitals. Surgeons cannot treat all their surgical patients simultaneously because of their time shortage and limited resources. Due to high costs, anesthesiologists also can represent a limited resource. Therefore, surgical patients' access to these services should be prioritized in an equitable manner by considering perspectives such as severity of disease, pain level, benefit from the surgery, patients' limitations in the ability to work/study, etc.^{3–5} However, clinicians infrequently use systematically developed and validated tools for prioritizing patients.⁶

Prioritization is a “systematic approach to figure out what is more and what is less important”⁷ by considering different perspectives. Prioritization helps achieve equitable health service delivery by allocating scarce resources fairly and transparently.⁷ In this study,

prioritization refers to prioritizing patients on a consultation-to-surgery waiting list.

A recent study on hip and knee surgery identified unfairness in timeliness of care and wide ranges of waiting times.⁸ Long waiting times have negative consequences on patients,⁹ including poorer quality of life and greater pain,^{10,11} greater employment problems,¹² increased patient's anxiety and frustration,¹³ and increased risk of adverse events¹⁴ and even mortality¹⁵. For example, based on a study, the cumulative pain burden that patients experience waiting for knee arthroplasty is vastly larger than that reduced by femoral nerve block postoperatively.¹¹ Use of prioritization tools is limited at some hospitals.

One hypothesis for the limited use of prioritization is that payment to the surgeons quantifies actual societal goals and objectives. In many countries, such as Canada, the vast majority of surgeons at the vast majority of hospitals are paid fee for service, even members of large groups. This system is by design, wherein fee for service payment creates incentives for the surgeons to serve as their patients' advocates for surgery. Prioritization of patients for surgery by hospital or region would often result in less personal compensation to individual surgeons. Thus, most patients would accept to have a different surgeon to

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¹ www.FranklinDexter.net.

Table 1
Search strategies of Section 2.1 performed on April 28, 2017.

Medline (OVID)	<p>#1: (surger* or surgical).ti,ab. or Elective Surgical Procedures/ or exp Surgical Procedures, Operative/ or su.fs. #2: ((priority or referral*) adj3 scor*) or triage or ((prioritis* or priorit* or priority or queuing) adj3 (referral* or patient*)).ti,ab. or ((prioritis* or priorit* or priority).ti,ab. and ((elective or waiting time* or waiting list*).ti,ab. or Waiting Lists/ or Referral and Consultation/)) or Triage/ or Health Priorities/ #3: ((rater* or surgeon* or physician* or expert* or team or professional* or provider* or specialist*) adj3 (assess* or rate or rated or rates or rating or scor* or opinion* or advice* or advis* or feedback)).ti,ab. #4: meta-analysis.pt. OR exp meta-analysis as topic/ OR review.pt. OR exp review literature as topic/ OR letter.pt. OR comment.pt. OR editorial.pt. #5: 1 AND 2 AND 3 #6: 4 AND 5</p>
Embase (Elsevier)	<p>#1: (surger* or surgical):ti,ab or "Elective surgery"/de or "Surgery"/exp #2: (((priority or referral*) near/3 scor*) or triage or ((prioritis* or priorit* or priority or queuing) near/3 (referral* or patient*)) or ((prioritis* or priorit* or priority) and (elective or "waiting time*" or "waiting list*"))):ti,ab #3: ((rater* or surgeon* or physician* or expert* or team or professional* or provider* or specialist*) near/3 (assess* or rate or rated or rates or rating or scor* or opinion* or advice* or advis* or feedback)):ti,ab #4: 'meta analysis'/exp or 'meta analysis (topic)'/exp or 'review'/exp or 'literature'/exp or 'systematic review (topic)'/exp or 'letter'/exp or 'editorial'/exp or 'note'/exp #5: #1 AND #2 AND #3 #6: #4 AND #5</p>
Web of science	<p>TS= (surger* or "surgical") AND TS = (((("priority" or referral*) near/3 scor*) or "triage" or ((prioritis* or priorit* or "priority" or "queuing") near/3 (referral* or patient*)) or ((prioritis* or priorit* or "priority") and ("elective" or "waiting time*" or "waiting list*")))) AND TS = ((rater* or surgeon* or physician* or expert* or "team" or professional* or provider* or specialist*) near/3 (assess* or "rate" or "rated" or "rates" or "rating" or scor* or opinion* or advice* or advis* or "feedback"))</p>

have surgery sooner, even if to gain 4 days.¹⁶ However, a consequence of a payment system encouraging surgeons to work long hours would be reduced incentives to have such conversations.

If the use of prioritization were limited by physician compensation, then there would be few prioritization schemes designed for use by individual surgeons. To test this potential explanation, we performed a systematic review. We hypothesized that we would find hundreds of previous reports of surgical prioritization schemes for elective surgery, but among those papers, very few that consider the prioritization of individual surgeons' patients.

2. Methods

2.1. Data sources and Search strategy

The following three electronic databases were searched: OVID MEDLINE, EMBASE, and Web of Science. Databases were reviewed for papers evaluating developed and/or used prioritization tools. Publication dates included were from database inception to the 3rd week of April 2017. There were no restrictions based on language.

The search strategies are given in Table 1. The systematic review protocol and PRISMA checklist are available from the first author.¹⁷ The prospective study registration was in PROSPERO.¹⁸

2.2. Inclusion criteria

Broadly, studies were eligible for inclusion if they included prioritization of patients undergoing elective surgery (Table 1). No restriction was placed on the procedure, disease, intervention, patient condition, patient age, type of comparator(s)/controls, type of facility, or outcome(s). These broad criteria were considered for our studied denominator. For the numerator, we limited consideration to prioritization of patients of individual surgeons.

2.3. Exclusion criteria

The studies were limited to peer-reviewed papers with abstracts, the latter a requirement since the denominator was based on the review of titles and abstracts (Table 1). Editorials, letters, and viewpoints were excluded. Review articles (systematic reviews, meta-analyses, meta-syntheses, scoping reviews, narrative reviews, rapid reviews, critical reviews, and integrative reviews) were excluded as well.

2.4. Study selection

Two of the databases (OVID MEDLINE and EMBASE; Section 2.1) had the option to limit articles to certain types (i.e., those meeting the exclusion criteria of Section 2.3). Consequently, our approach for the three databases used (Section 2.1) was to perform five searches. In the first three searches, the inclusion criteria alone were applied (Section 2.2) to each of the three databases (Section 2.1). In the latter two searches, for OVID MEDLINE and EMBASE, respectively, the inclusion criteria were applied (Section 2.2) and the articles were limited to those that included the exclusion criteria of Section 2.3 (Table 1). The five searches were imported into Microsoft Excel 2015. The articles that we reviewed manually were those of the first three searches from Section 2.2 that were absent from final two searches of Section 2.3. Duplicate articles among the databases were identified and deleted based on title and journal. These steps were performed independently by SAR and FD with no difference in production.

A two-stage screening process was used to assess the relevance of studies identified in the search. First, two authors (SAR, FD) screened all remaining titles and abstracts to count articles related to prioritization of surgery. This gave the denominator. Second, the same authors reviewed the titles and abstracts for any suggestion of the consideration of prioritization of individual surgeon's patients. The full-texts of those articles were read. During this second step, one of the authors (FD) made 1 mistake, incorrectly classifying 1 paper's abstract as potentially related to individual surgeon's patients; this error is not included in the PRISMA flow diagram illustrating the selection process (Fig. 1).

3. Results

From 370 database records, there were 146 studies related to prioritization of patients for elective surgery (Fig. 1). Each of the 3 meeting review criteria based on title and abstract screening were English-language. The 1 article that met the inclusion criteria as being related to the prioritization of individual surgeons' patients had been published by one of the study authors (Fig. 1).³ That article reported the development of a prioritization tool and testing it by prioritizing two individual orthopedic surgeons' patients at a large teaching hospital in Iran.³

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