King Saud University
College Of Engineering

Design of a Decision Support System for Physician Scheduling at King Khaled Eye Specialist Hospital

Operations Research in Health Care:

- Health care is one of the largest industries in the world.
- Health care systems present many complex problems that could benefit from operations research techniques.
- Health care has multiple decision-makers with conflicting goals and objectives.

Challenges:

- Too much consideration: leaves, various sessions (clinic, surgery, administrative, training, teaching, resource), on calls.
- 6 departments (Anterior segment, Glaucoma, Neurology, Aculoplastic, Pediatric, Retina)
- 35 physicians with 7 different positions (general chief, chiefs of department, chiefs of researches, regular physician …)
- 13 clinic rooms
- 10 surgery rooms
- Waiting list with more than 50,000 patients.
- Various physician preferences.
- KKESH regulations of physicians schedule.

Physicians scheduling practices at KKESH

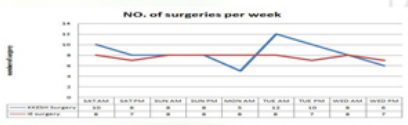
Before using the developed decision support system:
- Headache for the scheduler.
- Many days to generate the schedules.
- No optimization tool used.
- Overloaded physicians.
- Underutilized resources.

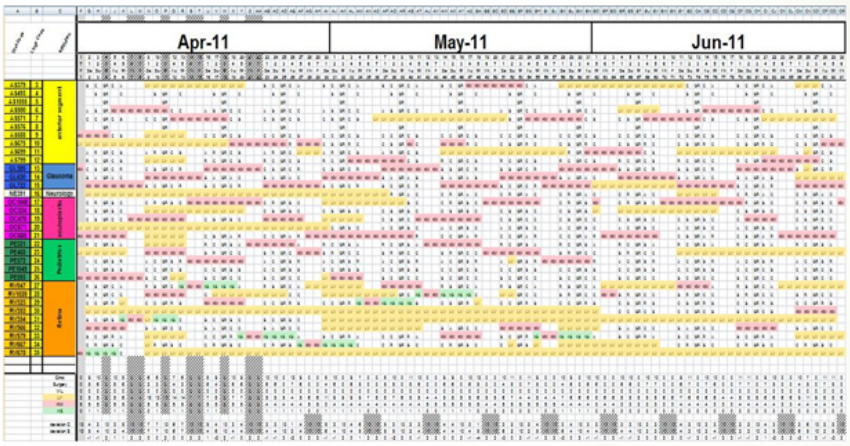
After using the developed decision support system:
- Maximum use of resources.
- Satisfaction of all physician preferences.
- Error free.
- Friendly-user computer package.
- Time to generate 3 months schedule reduced to ONE CLICK.
- Full satisfaction of scheduler.
- Maximum shortage of clinic sessions reduced from 50% to ZERO.
- Maximum shortage of surgery sessions reduced by 40%.
- More flexibility to cover shortage of clinic or surgery sessions by waiting list sessions.

Approach:

- Mathematical programming modeling for large size problem (22982 variables, 26733 constraints).
- Use of optimized software LINGO.
- Link it with Microsoft Excel.

More balanced use of resources: very important to reduce physician overload and patient waiting time





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