Key Insights
- Head Optometrists are responsible for managing patient flow amongst optometrists, including stacking patient files correctly and ensuring that optometrists are not taking more than 30 minutes with each patient
  - This is NOT always the case in practice
- Optometrists should be able to determine how much pre-work needs to be done, depending on the type of patient (e.g. new vs. follow-up vs. consultation)
- Doctors are advised to take approximately 20 new patients per day; it's up to them how to schedule them
- Doctor's schedules are managed based on templates that are compiled based on the capacity of the doctor and the optometrists available (i.e. 10 patents an hour for a given doctor and 3 optometrists - ideal case when optometrists do workups in 20 minutes and doctors see patients no more than 6 minutes each)
- Causes for bottlenecks are evident in the patient arrival times (i.e. late arrivals), patient workups (variations of 20 min - 1hour/patient) and diagnostics tests (20 min - 4 hours).
- Simulation model that captures patients flow through the system, various delays and how capacity decisions influence them can be helpful to manage demand and test various resourcing policies and improvement initiatives.
- Facilitators are responsible for bringing patients where they need to go (e.g. from waiting room to clinic, from clinic to Investigations)
- The notion of "appointment time" can be different, depending on who you are asking (e.g. ophthalmologist vs. optometrist vs. patient)
  - Where is the patient supposed to be by that time? In the check-in? At the clinic?
  - What does it mean to adhere to your appointment time? (It may be a cultural phenomenon that causes lateness)
- Look to understand how patient mix over a given time affects wait times
  - Expectation is that more variety means longer wait times
- Found that patients with appointments in the afternoon had shorter wait times
  - Could be because doctors spend more time on training in the morning and intervene to speed up patient flow in the afternoon
  - Possible recommendation: change the mix so that training happens more in the afternoon
- For walk-in patients, having a dynamic dashboard of appointments for each doctor might help to schedule appointments
- Revenue generating patients (e.g. refractive surgery) take priority - need to be seen sooner to keep them happy
- What is the purpose of the Fellows? Do they help relieve patient flow, or do they add to the wait because of the need for training?
  - Some doctors feel the need to see every patient, whereas others are comfortable letting their Senior Fellows discharge
- The error rate on both optometrists and ophthalmologists increase as a function of the time of the day and the patient volume.

- Most of the walk-ins are scheduled in the day
- Triage process needs to be more effective - (PG)
- Patients post surgery are seen indefinitely (1 day, 1 week, 4 weeks, etc). Therefore doctors patient loads grow based on the number of surgeries they perform. The appointment schedules need to be adjusted based on that. i.e. the number of required new patient slots will have to decrease to accommodate growing number of follow up patients.
- Post op appointments are scheduled early in the morning. This could be efficient only if the first appointments are for fresh or long follow up patients that require longer work up times. I.e. 30 min is the time when new patients are worked up.
- Scheduling too many new patients and long follow ups in a given hour necessarily increase waiting times. Administrators and front desk people need to be trained and abide by the appointment schedule that optimize the waiting times.
- Because LVPEI is a training institution, on average, patients see 3 medical staffs (e.g. optometrist fellow, optometrist intern, etc) before reaching the doctor.
- There are four types of patients, each with a different workup and total service time:
    - Fresh Appointments/Fresh Walkin (detailed workup + uncertain complexity)
    - Short Follow ups/Short Walk in (straightforward, quick)
    - Long follow up/Long follow up walkin (detailed workup + uncertain complexity)
    - Post op (1 week, 5 weeks) (straightforward, quick)
- 60% of the appointments are booked during a window of 8:20-11:30, and the remaining 40% of appointments are booked during the remaining 6 hours (11:30-17:30).
- Front desk people work from 6:30am - 8pm every day. Overworked with little breaks.
- Folders pile up in the check in desk before being carried up to the OPDs, which potentially creates delays between the check in time and the workup times. Lack of manpower (people to carry folders up and down the stairs) is a contributing factor.
- Administrative staff gets training on the job, because of time constraints which potentially contributes to rework and errors on appointment scheduling.

Potential Best Practices
- Checking in on optometrist who takes more than 30 minutes for work-ups.
- Allowing a 15 minute buffer for late patients (RAK)
- Combine follow-up and new patients at the beginning of the day so that the doctor can get through the follow-ups while the new patients are in work-up (RAK)
- Allocate specific slots (15 minutes, twice every 2 hours) for follow-ups from Diagnostics and Cross-Consultations (RAK)
- Categorize the folder stacks into "On-time", "Late", "Investigation", "Cross-consultation", "Dilated on-time", "Dilated late" (RAK)
- Late patients are penalized by forcing them to wait until another slot is available - priority is given to the patients who are on time (RAK)
    - As a result, patients tend to be on time in future appointments
- Standardize organization and flow of folders across Head Optometrists and Facilitators

- Assign simpler cases to trainees and Fellows: should be done by the Head Optometrist and/or Faculty Doctor
- Creating a comprehensive clinic so that some of the patient volume in the speciality clinic can be offloaded (PG)
- Require referrals from fresh patients (PG)
- Require optometrists to report times when they take patients for work-up (RAK)

Things to Follow-up On
- Understand different touch points for the patient prior to getting to the clinic (e.g. the check-in process, which desk they go to, how many desks they go to, what the wait times are like at each)
- Survey patients and doctors for their perception of appointment time
- Get our hands on the slip that walk-in patients fill out when they arrive; figure out where it goes
- Extract ICD (diagnosis codes) for each MR#

Key Observations
- Points of patient build up along the patient pathway
  - Waiting for check-in
  - Waiting for work-up
  - Waiting for consultation
  - Waiting for investigation
  - Waiting for post-investigation consultation
- Hospital-specific factors contributing to waiting time
  - Commitment to training medical staff
  - Patient volume vs. hospital capacity
- Clinic-specific factors contributing to wait time
  - Management of patient folders and staff
  - # of Fellows, Optometrists, and Facilitators
  - Skill levels of staff
  - Size and layout of clinics
  - Anticipated vs. actual patient volume
  - Types and variety of patients that can be seen
  - Need for diagnostics: how many, what type, when
- Patient-specific factors contributing to wait time
  - Lack of awareness of appointment-based system
  - Bias for early morning arrival
  - High volume of late arrivals and no shows
- Scheduling-specific factors contributing to wait time
  - Doctor-specified appointment and walk-in templates
  - Administrator's adherence to doctor-specified appointment templates
  - Real-time prioritization of patients (late vs. on-time, paying vs. non-paying, walk-in vs. appointment, case complexity, time of day)

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