Reduce patient waiting time for cycloplegic refraction with Cyclopentolate Home Instillation Project, CHIP

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Background

Cycloplegic refraction (CR) involves putting Cyclopentolate Eyedrops (CE) to relax the ciliary muscles (focusing power of the eye) of children to check their spectacle power.

As is:

- Frequent putting of painful CE **in eye clinic**
- Long patient waiting time for CE to take effect
- CR is time consuming & labour intensive

To be:

- CHIP involves CE instillation **at home,** 30 - 60 minutes prior to clinic appointment.

Simplifies workflow: Negates **3** cycles of 5 min CE instillations → **Eliminates unnecessary waiting time:** **20 mins** of waiting time for cycloplegia avoided → CR

Potentially reduces waiting time by 35 mins

Method

Stringent Inclusion Criteria

Qualitative (Questionnaire Survey)

- 5 items satisfaction survey
  - CE Instillation
  - Waiting time for CR
  - Receptiveness to CHIP
  - Confidence to instill CE
  - Remembrance to instill CE
- Discomfort Score
- Reporting of adverse/ side effects (if any)

Quantitative Measurement

- Time at Registration
- Time at Vision Measurement
- Time at CR
- Pupil Size (in mm) for both eyes

Results

- Between September 2015 to March 2016, **13 subjects** (aged 7 -12 years old) recruited
- Data analysed with **Wilcoxon signed-rank test**

A. Quantitative Measurement:

Average	Clinic Cycloplegia	CHIP	P-value
Waiting time for CR	63 ± 25mins	23 ± 17mins	<0.001
Right Pupil Size	7.0 ± 1.3mm	7.2 ± 1.3mm	0.844
Left Pupil Size	7.1± 1.4mm	7.0± 1.4mm	0.86
Eye drop **discomfort score**	4 Moderate	5 Moderate	0.18

Shorter waiting time reduced by **40mins (64.5%)**

Similar efficacy Similar pupil size

Comparable comfort level Similar discomfort score

B. Questionnaire Survey responses:

0% had medication side effects

84.6% more comfortable to instill eyedrop at home

92.3% reported good/ excellent ability to instill eyedrop

92.3% wants CHIP for subsequent visits

100% reported improved waiting time than clinic cycloplegia

Project Impact

Patients and Parents

- Shorter waiting time
- Hassle-free experience
- Saving CE time for doctor consult
- CE instillations at home
- Better parent-child interaction

Staff

- Increased productivity
- Improved collegiality with better manpower coverage
- Better team work & synergy to serve patients better

OVS Department

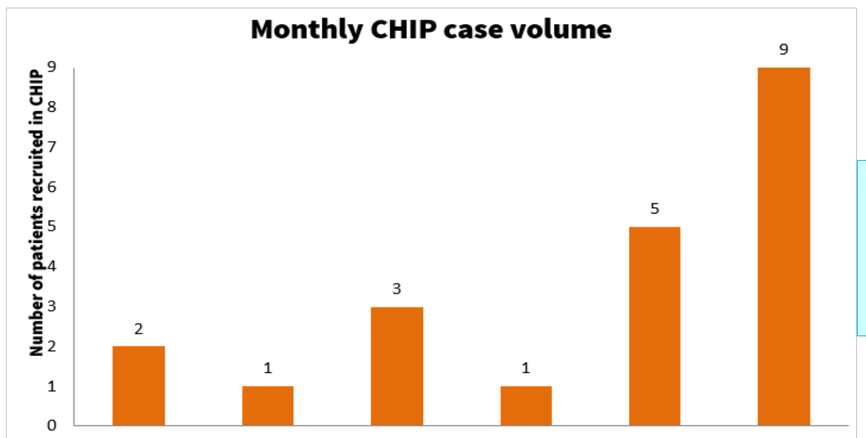
- Shorter eye clinic TAT
- Less congested clinic
- Improved patient satisfaction

Other benefits

- Increased revenue: more refractions per unit time. Potential increase of $1,588.00 - $2,204.80/ year
- Reduced medication wastage with more favorable exchange terms with vendor

Sustainability

1. Regular surveillance of key performer indicators
eg. monthly case volume (Figure 1).



21 patients benefited after implementation in Oct '16

2. Mistake Proofing: CE minim packs dispensed to patient
3. Standardising & simplifying the work process further
4. Staff orientation & refresher training
5. Record tracking for audit & quality control

Conclusion

CHIP is a **safe** & **effective modality** with **high patient acceptance**.
It is a work process transformation that **eliminates Muda,** while **increasing productivity & reducing clinic waiting time**.