The impact of adopting JSON-
## (**J**ava**S**cript **O**bject **N**otation)

based Transcription Software

To improve Efficiency, Accuracy and Sustainability

S.Y. Lee, J.R. Neo, H.H. Fan, A.K. Chua, T. Dzurani, L.M. Daniel, P.K. Agarwal

Department of Child Development (DCD)

KK Women's and Children's Hospital (KKH)

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Department of Child
Development (DCD)
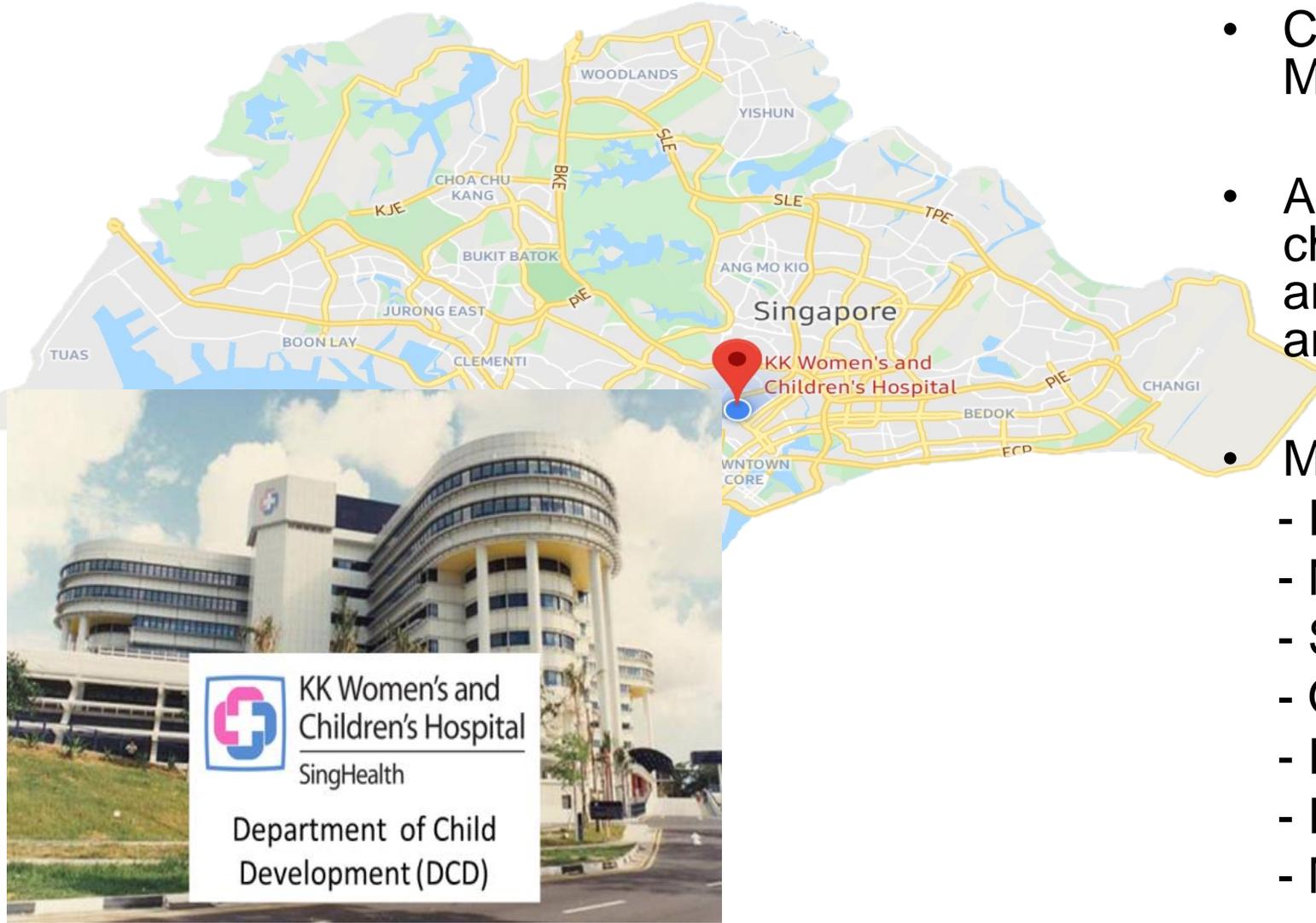
- Child Development Program of the Ministry of health

- Approx. 4000 - 5000 preschool children under the age of 7 are seen annually for developmental concerns and delays.

- Multidisciplinary team approach
  - Pediatrician
  - Nurse
  - Speech Therapist
  - Occupational Therapist
  - Psychologist
  - Educational Therapist
  - Medical Social worker

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VISION

The leading centre enabling children with developmental needs to face tomorrow.

MISSION

To deliver integrated holistic services with compassion, to children with developmental needs, supported by clinical excellence, education and innovation.

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Journey to Department of Child Development (DCD)

DCD Nurses' Roles

Before Primary School/ Special Education School
- Psychological assessments if needed
- Consultation with DCD doctors

Follow up visits
- Consultation with DCD doctor
- Nurse briefing
- Nurse screening if needed

First Visit
- General Information
- Developmental screening
- First Consultation with DCD doctor
- Patient education
- Psycho-emotional support

Attend to enquiries or requests

Score questionnaires

Conduct screenings

Facilitate the referrals/applications

Follow up on Dr's recommendations

Provide patient education and support

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The first visit at DCD

1 **Register**
Registration at the counter

Please bring along:
1. Child's NRIC
2. Health Booklet
3. Referral letter (if any)

2 **Interview by the Nurse**

- Measure height and weight
- Verify child's information

3 **Developmental Screen**

A developmental screen will be conducted to understand your child's overall developmental profile

6 **Payment**

- Your child's next appointments will be scheduled and confirmed via SMS
- Payment can be made online
- Payment by Baby Bonus is accepted at the counter

5 **Patient Education**

The nurse will:
- Explain the doctor's recommendations for your child
- Share other information or simple strategies

4 **Doctor Consultation**

- Medical interview
- Clinical examination and observation of your child
- Provide recommendation

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Current Process

Parent receives an SMS to complete the intake questionnaire via FormSg one week before the child's appointment.

Completed intake questionnaire received through our nurses' email.

The nurse prints out the email and transcribes the patient's details manually on Child's first DCD appointment.
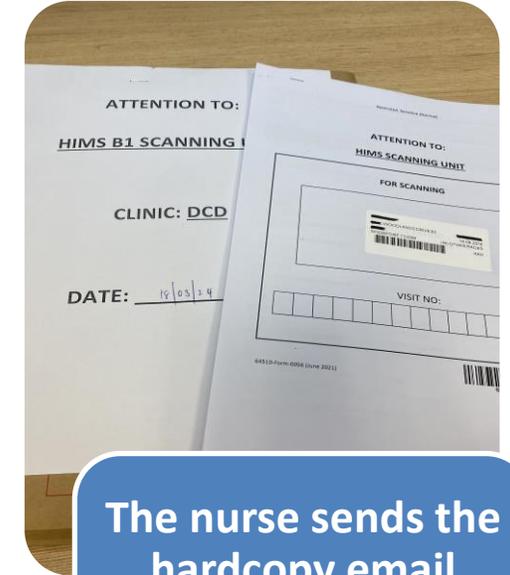
The nurse sends the hardcopy email printout to the Health Information Management Services(HIMS) to be scanned into the patient medical records.

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Parent Intake Questionnaire

- **Total 59 questions**
- **Contains:**
  - **Parents' Details**
  - **Social History**
  - **Educational History**
  - **Evaluation and Intervention**
  - **Family Medical History**
  - **Child Developmental Milestones**

— Father Details

Mother Details

Social History

Educational History

Evaluation and Intervention

Family Medical History

Child Developmental Milestone

1. **Child's Full Name:**
As per NRIC/ FIN

2. **Does your child have a valid Birth Certificate or Foreign Identification Number in Singapore?**

✗ No	✓ Yes

3. How are you related to the child?

Create | Preview

Sections

Document Info

- **Medical Service G**
  - Visit information
  - ▼ GENOGRAM & CONTACT
    - Father
    - Mother
    - Child's Siblings
  - ▼ SOCIAL HISTORY
    - Parent's Marital Status
    - Main care-giver
    - Main Home Language(s
    - Other Home Language(
    - Gross monthly househo
    - Financial difficulty
    - Financial Assistance
    - Specify agency
    - KKH_DCD_TypeHousin

Retrieve Last Charted...

Insert Default Values

Clear Unsaved Data

Copy Forward | Refer to Note | Preview ▾ | Modify Template | SCM Acronym Expansion

GENOGRAM & CONTACTS

Father

Name
[   ]

Date of Birth
[dd - MMM - yyyy] ▲▼ (C)(T)(🕐)

Home No.
[   ]

Work No.
[   ]

Mobile No.
[   ]

Email
[   ]

Educational qualification
[▾]

Occupation

Mother

Name
[   ]

Date of Birth
[dd - MMM - yyyy] ▲▼ (C)(T)(🕐)

Home No.
[   ]

Work No.
[   ]

Mobile No.
[   ]

Email
[   ]

Educational qualification
[▾]

Occupation

Need Help?   Mark Note As: ☐ Results pending   ☐ Priority   ☐ Incomplete   ☐ Charge Capture SuperBill

Save | Cancel

Steps Taken

1) Identify problems and Opportunities
2) Aim of the project
3) Verify problems and opportunities with data
4) Perform a root cause analysis
5) Identify solutions
6) Establish a new process
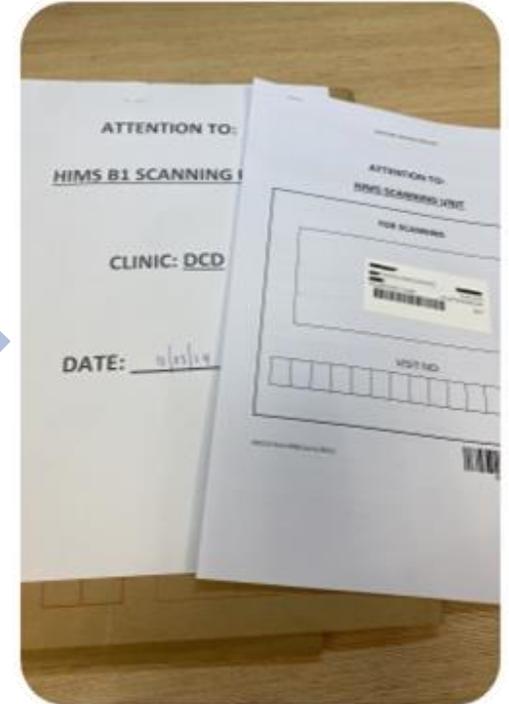7) Implement solutions and check for sustainability with data

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Step 1.Identify Problems and Opportunities

Problem: 1) Long time spent by the nurses
2) Error(s) during transcription

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Step 2.Clarify Aim of the project

To <u>reduce</u> **time** spent by nurses on transcriptions during interviews by at least <u>50%</u> and to reduce the **error** rate by Dec 2023.
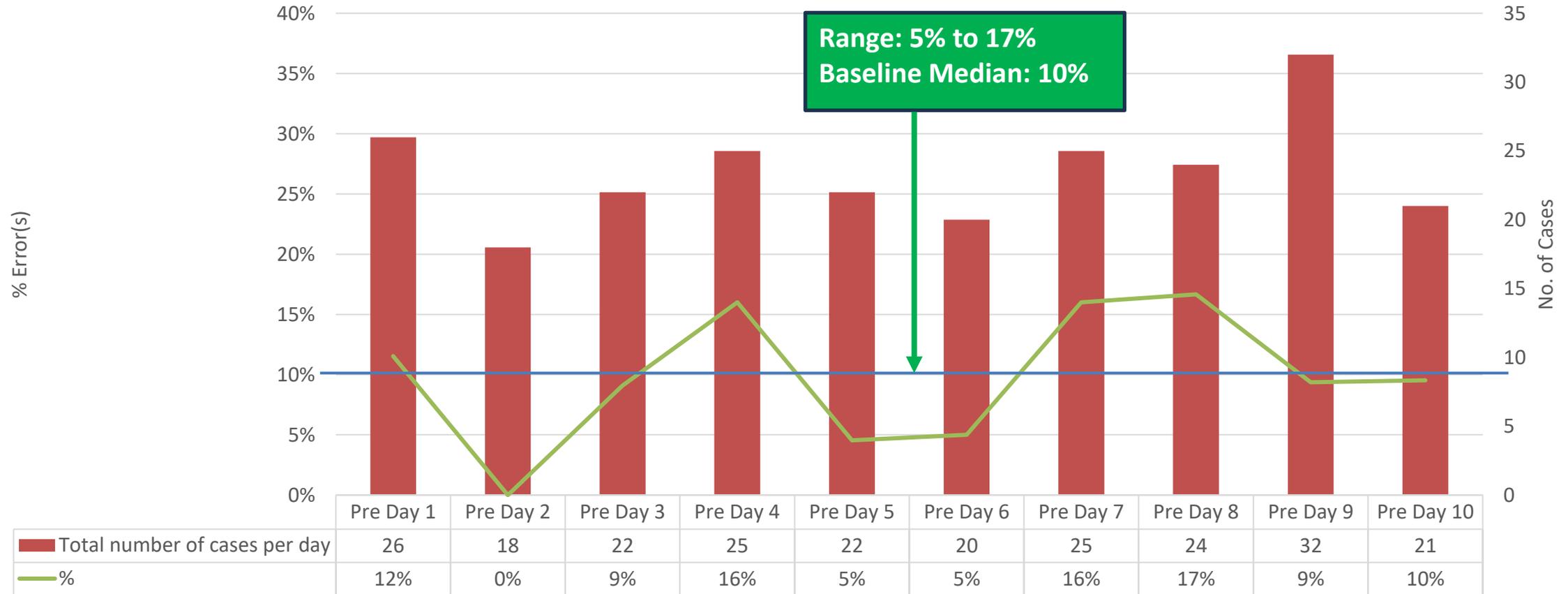
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Step 3: Verify Problems and Opportunities with Data

Range: 5760 – 10240
Baseline Median: 7360

Time spent on Transcription 7 August 2023 to 22 August 2023

	Pre Day 1	Pre Day 2	Pre Day 3	Pre Day 4	Pre Day 5	Pre Day 6	Pre Day 7	Pre Day 8	Pre Day 9	Pre Day 10
Total number of cases per day	26	18	22	25	22	20	25	24	32	21
Total Time spent (Seconds)	8320	5760	7040	8000	7040	6400	8000	7680	10240	6720

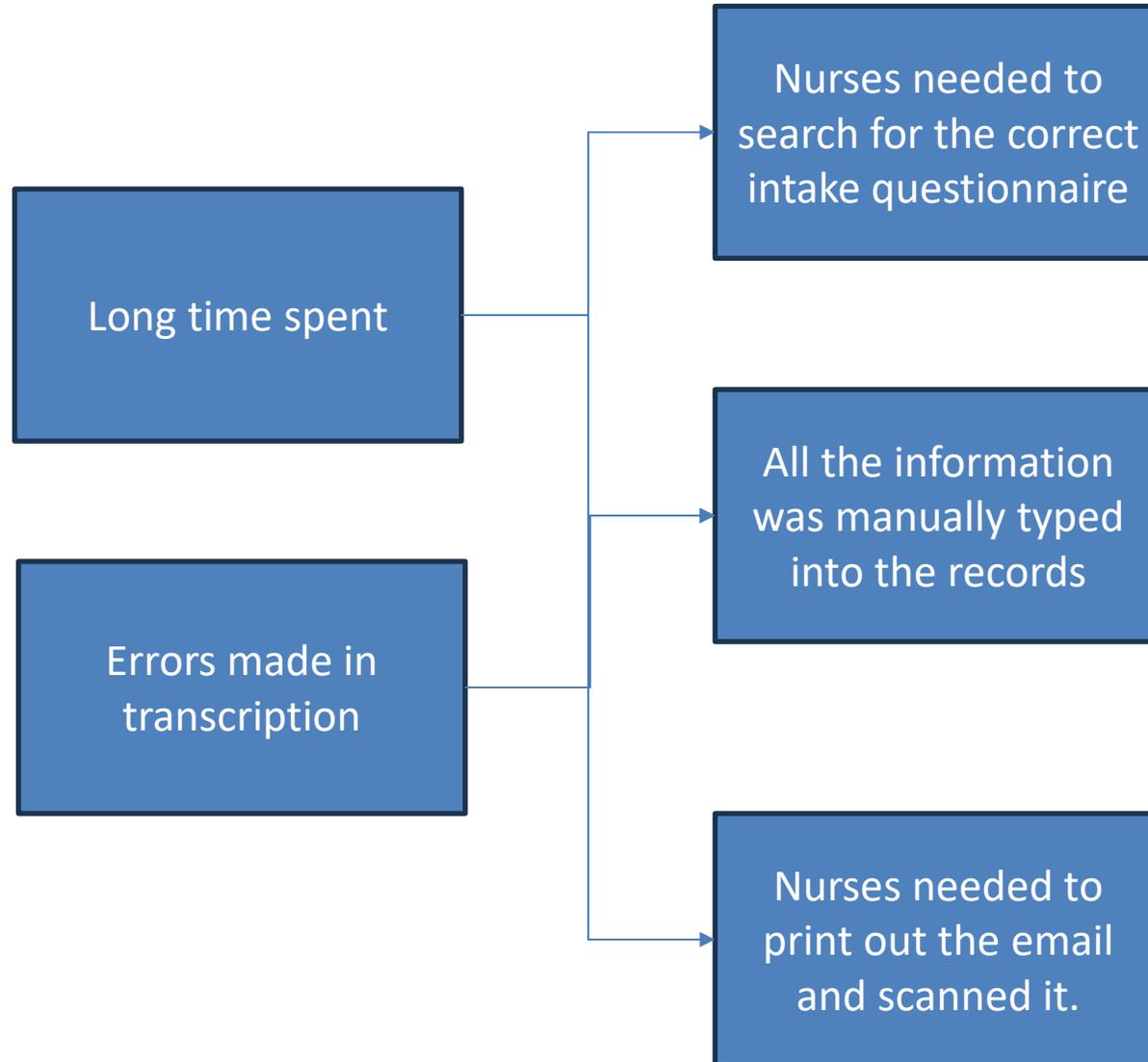KK Women's and Children's Hospital
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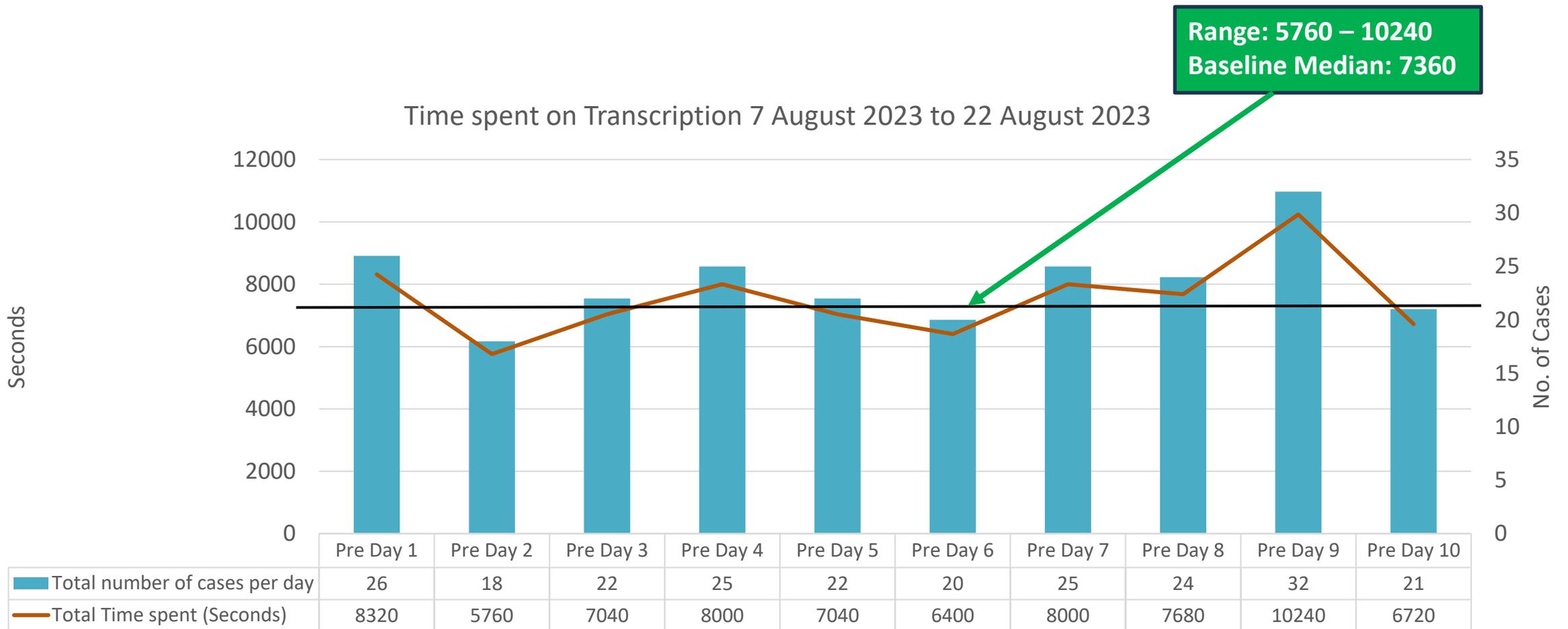
Step 3: Verify Problems and Opportunities with Data

% of Error(s) during Transcription 7 August 2023 to 22 August 2023

Range: 5% to 17%
Baseline Median: 10%

	Pre Day 1	Pre Day 2	Pre Day 3	Pre Day 4	Pre Day 5	Pre Day 6	Pre Day 7	Pre Day 8	Pre Day 9	Pre Day 10
Total number of cases per day	26	18	22	25	22	20	25	24	32	21
%	12%	0%	9%	16%	5%	5%	16%	17%	9%	10%

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Step 4. Root Cause Analysis

Long time spent

→ Nurses needed to search for the correct intake questionnaire

Errors made in transcription

→ All the information was manually typed into the records

→ Nurses needed to print out the email and scanned it.

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Step 5. Develop a Solutions: What is JSON?

- JSON stands for **J**ava**S**cript **O**bject **N**otation

- It is commonly used for transmitting data between a server and a web application as text.

- Information in script is copied and pasted to Excel

- It is widely used because it is straightforward, making it an ideal format for data exchange.

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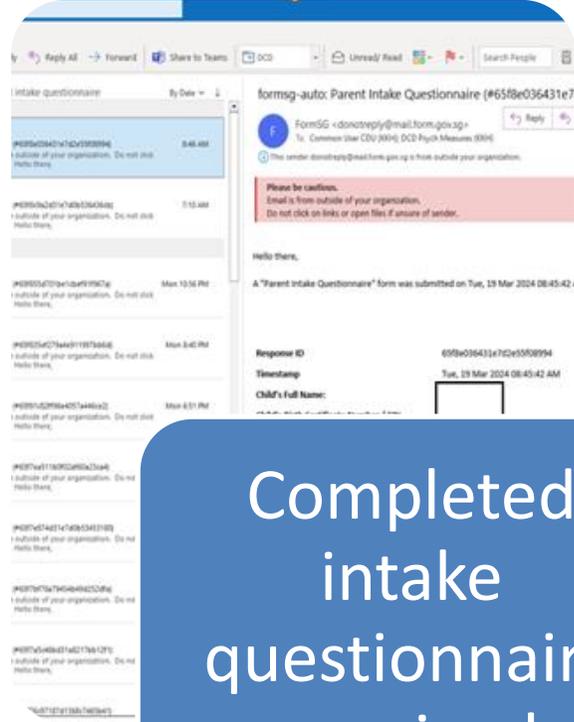SingHealth

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Step 6. Develop a New Process

Parents receive an SMS to complete the intake questionnaire one week before the child's appointment

Completed intake questionnaire received through our nurses' email.
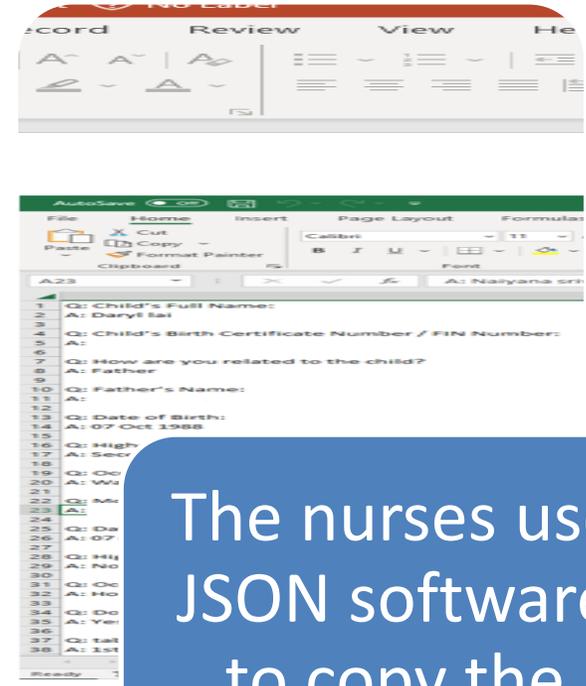
The nurses use JSON software to copy the patient's details into the medical record.

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formsg-auto: Parent Intake Questionnaire (#6683c2a3bfd0355f4f75f183)

F FormSG <donotreply@mail.form.gov.sg>

To ○ Common User CDU (KKH); ○ DCD Psych Measures (KKH)

5:05 PM

ⓘ This sender donotreply@mail.form.gov.sg is from outside your organization.

===============

Please ignore this section. It is meant for the Data Collation Tool to process.

-- Start of JSON --

[{"question":"Response ID","answer":"6683c2a3bfd0355f4f75f183"},{"question":"Timestamp","answer":"Tue, 02 Jul 2024 05:04:35 PM"},{"question":"Child's Full Name:","answer":"Joash Lee"},{"question":"Does your child have a valid Birth Certificate or Foreign Identification Number in Singapore?","answer":"Yes"},{"question":"Please enter BC/FIN number","answer":"S6075382B"},{"question":"How are you related to the child?","answer":"Mother"},{"question":"Father's Name:","answer":"Lee Jun Jie"},{"question":"Date of Birth:","answer":"05 Dec 1988"},{"question":"Highest Educational qualification:","answer":"Degree"},{"question":"Occupation:","answer":"Engineer"},{"question":"Mother's Name:","answer":"Woo Ting En"},{"question":"Date of Birth:","answer":"01 Nov 1988"},{"question":"Highest Educational qualification:","answer":"Degree"},{"question":"Occupation:","answer":"Housewife"},{"question":"Does your child have any siblings?","answer":"No"},{"question":"[table] How many brothers and sisters does the child have: (Siblings, Sibling's Age)","answer":","},{"question":"[table] How many brothers and sisters does the child have: (Siblings, Sibling's Age)","answer":","},{"question":"[table] How many brothers and sisters does the child have: (Siblings, Sibling's Age)","answer":","},{"question":"[table] How many brothers and sisters

Data collection

Data were collected over <u>10 days</u> on <u>235 patients</u>

- **Time spent**
  - A stopwatch was used to record timing.
  - All DCD nurses running new case clinics were involved.
  - A group briefing was conducted follow by an email with instructions was sent out.
  - The timing was recorded using an Excel sheet, Starting from receiving the patient's file to completion of data entry into patient's record.
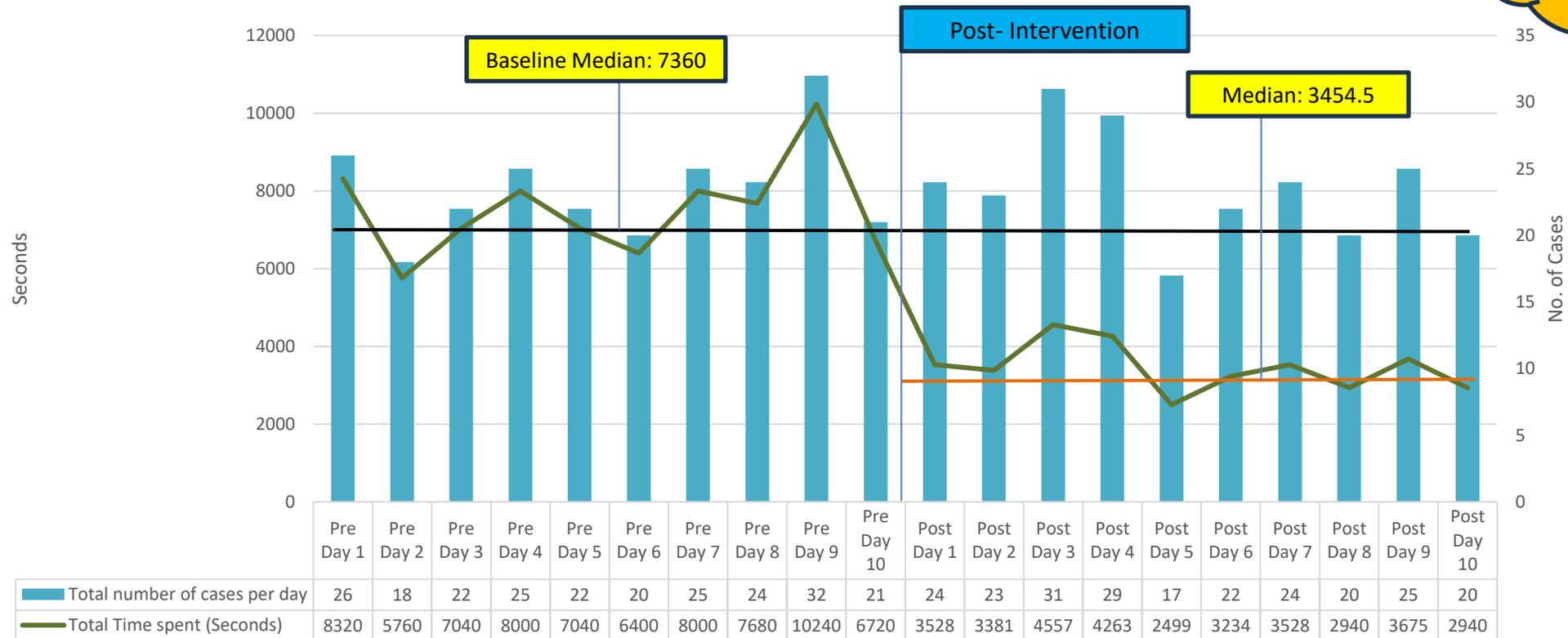

- **Reduction in Errors**
  - All 235 patient's emails for the 10 days period were printed and checked by one of the team members, who then entered the data into the excel sheet.
  - All errors were recorded including those reported by other staffs.

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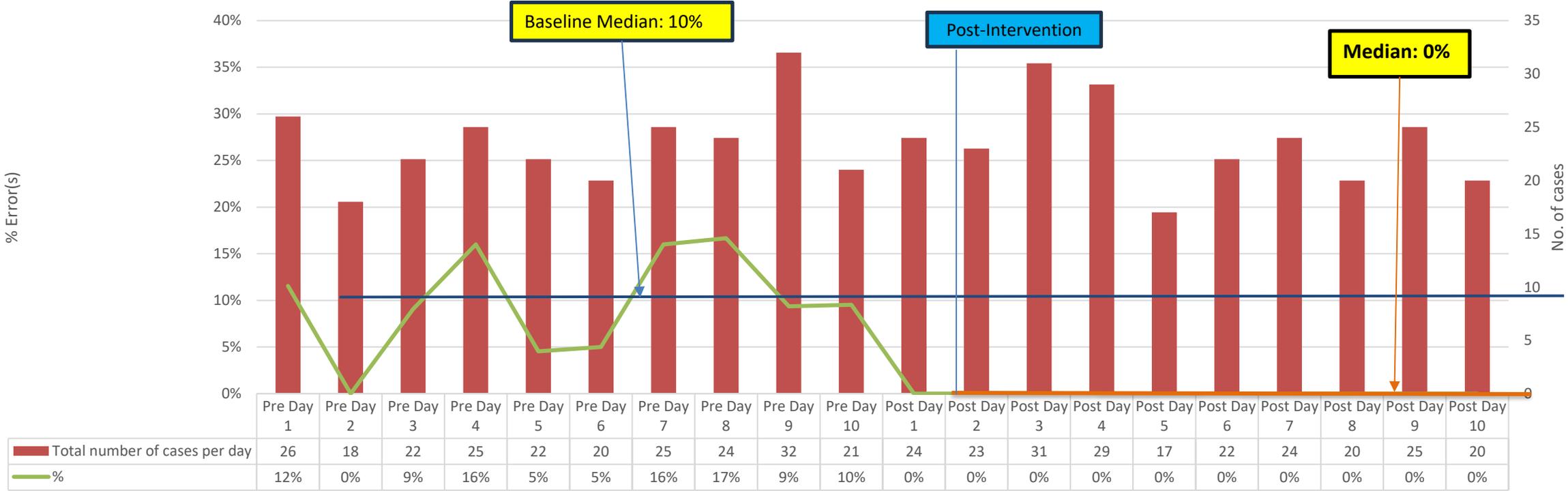
Step 7: Implement Solutions and Check for Sustainability and Impact with Data

0% Errors

% of Error(s) during Transcription
Pre 7 August 2023 to 22 August 2023 & Post 20 November 2023 to 8 December 2023

Baseline Median: 10%

Post-Intervention

Median: 0%

	Pre Day 1	Pre Day 2	Pre Day 3	Pre Day 4	Pre Day 5	Pre Day 6	Pre Day 7	Pre Day 8	Pre Day 9	Pre Day 10	Post Day 1	Post Day 2	Post Day 3	Post Day 4	Post Day 5	Post Day 6	Post Day 7	Post Day 8	Post Day 9	Post Day 10
Total number of cases per day	26	18	22	25	22	20	25	24	32	21	24	23	31	29	17	22	24	20	25	20
%	12%	0%	9%	16%	5%	5%	16%	17%	9%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

7 August 2023 to 22 August 2023   20 November 2023 to 8 December 2023

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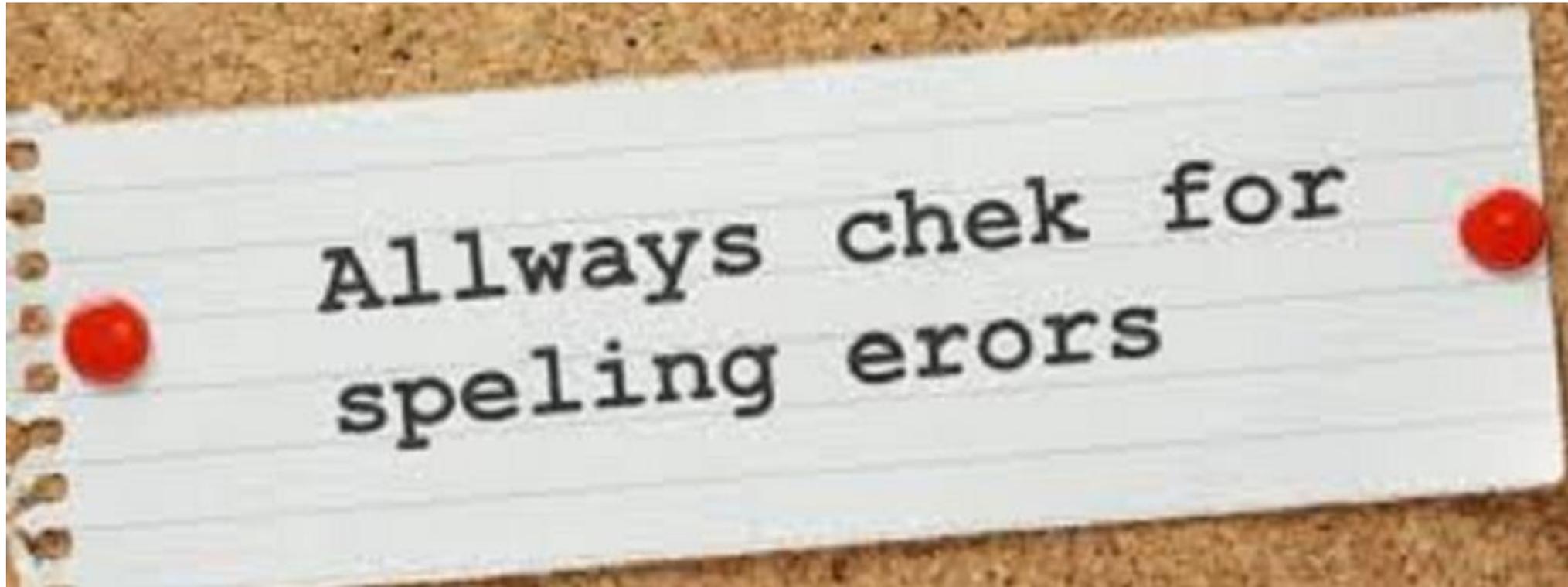SingHealth

Conclusion

AIM

To <u>reduce</u> **time** spent by nurses on transcriptions during interviews by at least <u>50%</u> and also to reduce the **error** rate by Dec 2023.

Results

This has been achieved with <u>53%</u> time saved and zero error.

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Limitations

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Tangible Benefits

1) Reduction in time spent on manual transcription.

2) Nurses time saved has been channeled to more patient focus work

Reduction in errors made during manual transcription

Reduction in operational cost by lesser paper consumption

Intangible Benefits

Environmental protection by making use of technology to go paperless.

Promotion of a safety work environment by avoiding work-related injuries due to ergonomic hazards.

Increased staff satisfaction, productivity and quality of work.

Time saved could be channeled for patient education and family support.

Sustainability

- This software has been used for many other forms in our clinic to increase productivity.

- It has now become part of our current work process.

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Thank you!

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