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Mission Statement

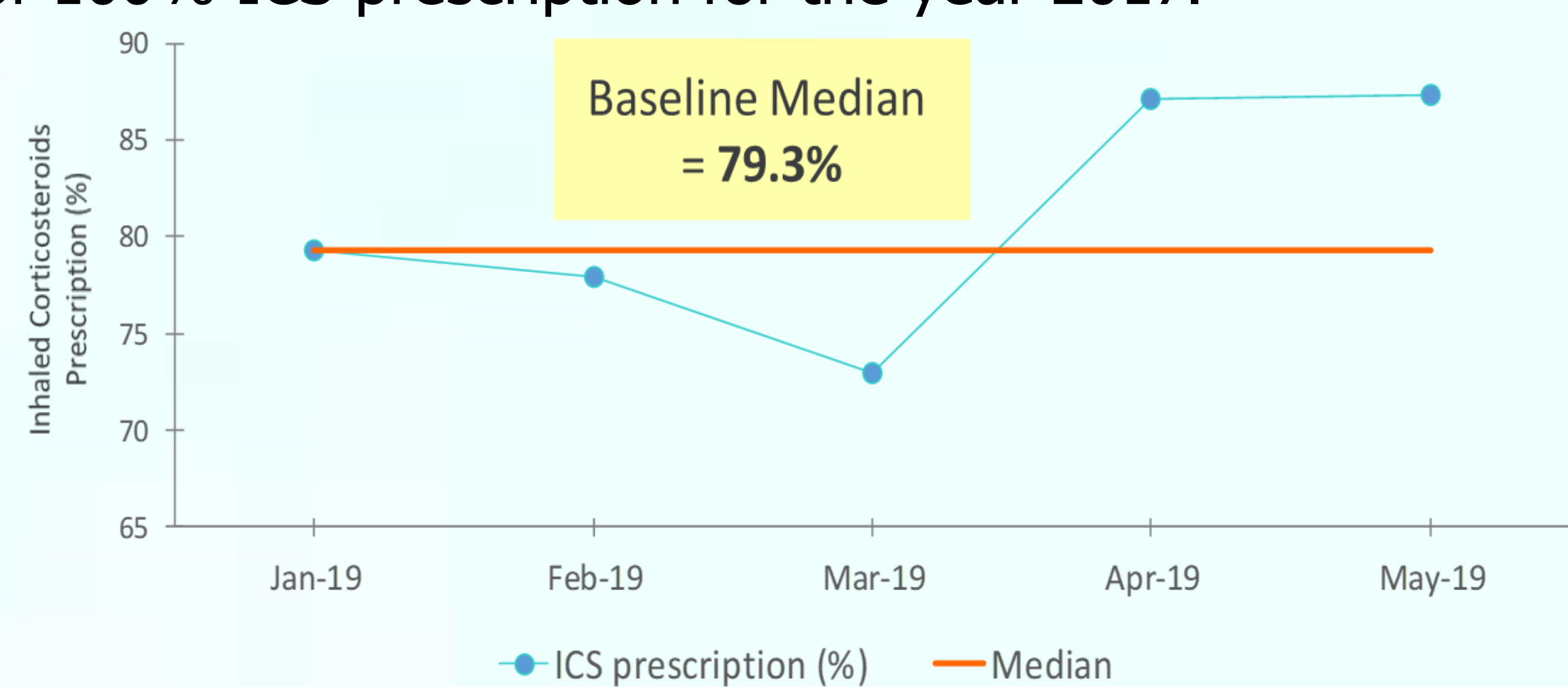
To sustain the prescription of inhaled corticosteroids (ICS) in asthma patients discharged from Emergency Department above 92% following our CPIP

Team Members

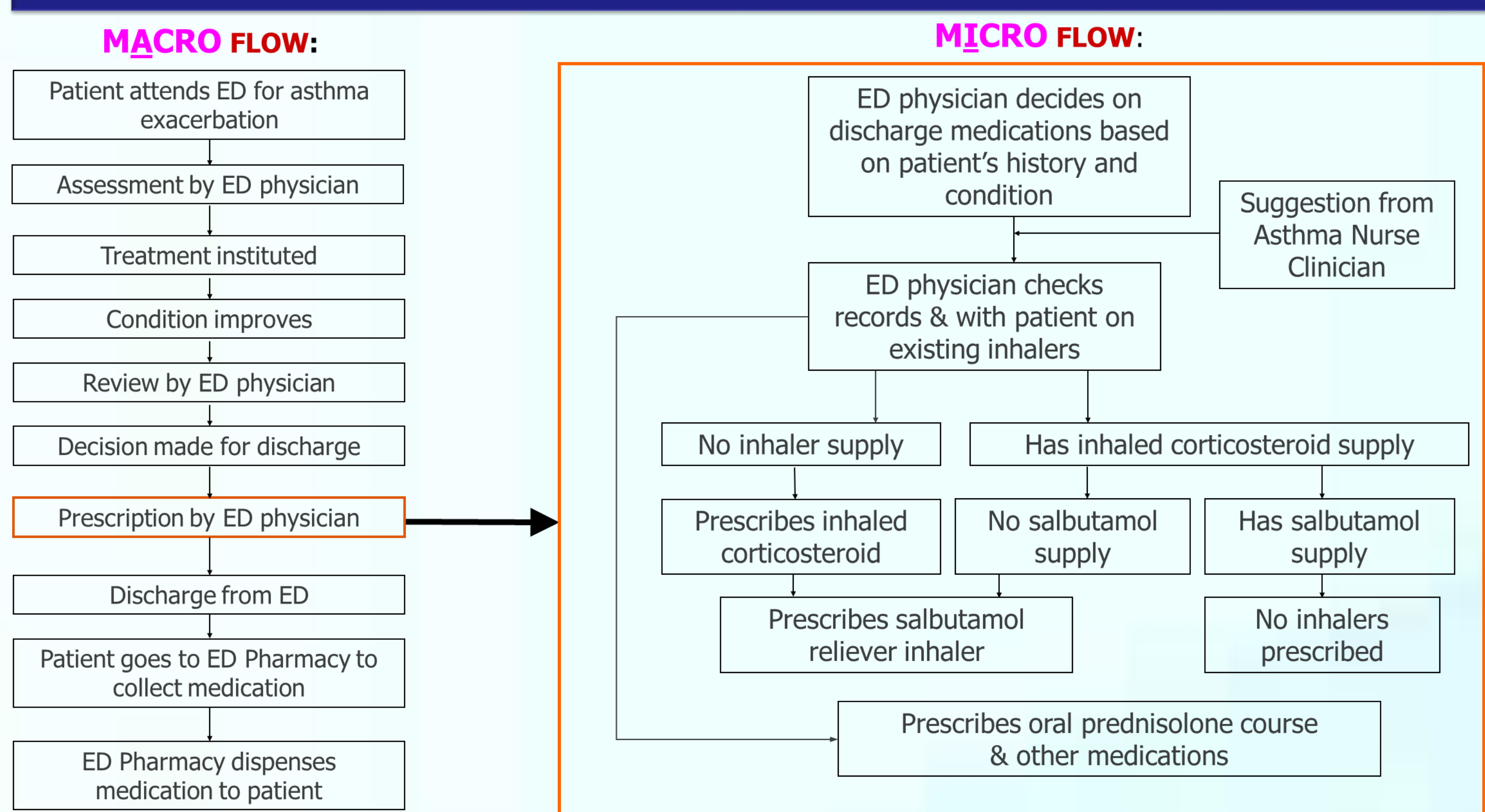
| | Name | Designation | Department |
|---------------------|------------------------------------|------------------------|--------------------|
| Team Leaders | Dr Esther Pang Pee Hwee | Consultant | RCCM |
| | Mr Lee Tingfeng | Senior Pharmacist | Pharmacy |
| Team Members | Dr Ang Joo Siang | Consultant | Emergency Medicine |
| | Ms Tan Rui Yi Alyssa | Senior Pharmacist | Pharmacy |
| | Ms Lathy Prabhakaran | Senior Nurse Clinician | Nursing |
| | Ms Lee Shu Yi | Senior Staff Nurse | Nursing |
| Sponsors | A/Prof Abisheganaden John Arputhan | Head | RCCM |
| | Adj Asst Prof Ang Hou | Head | Emergency Medicine |
| Facilitator | Adj A/Prof Thomas Lew Wing Kit | | |

Evidence for a Problem Worth Solving

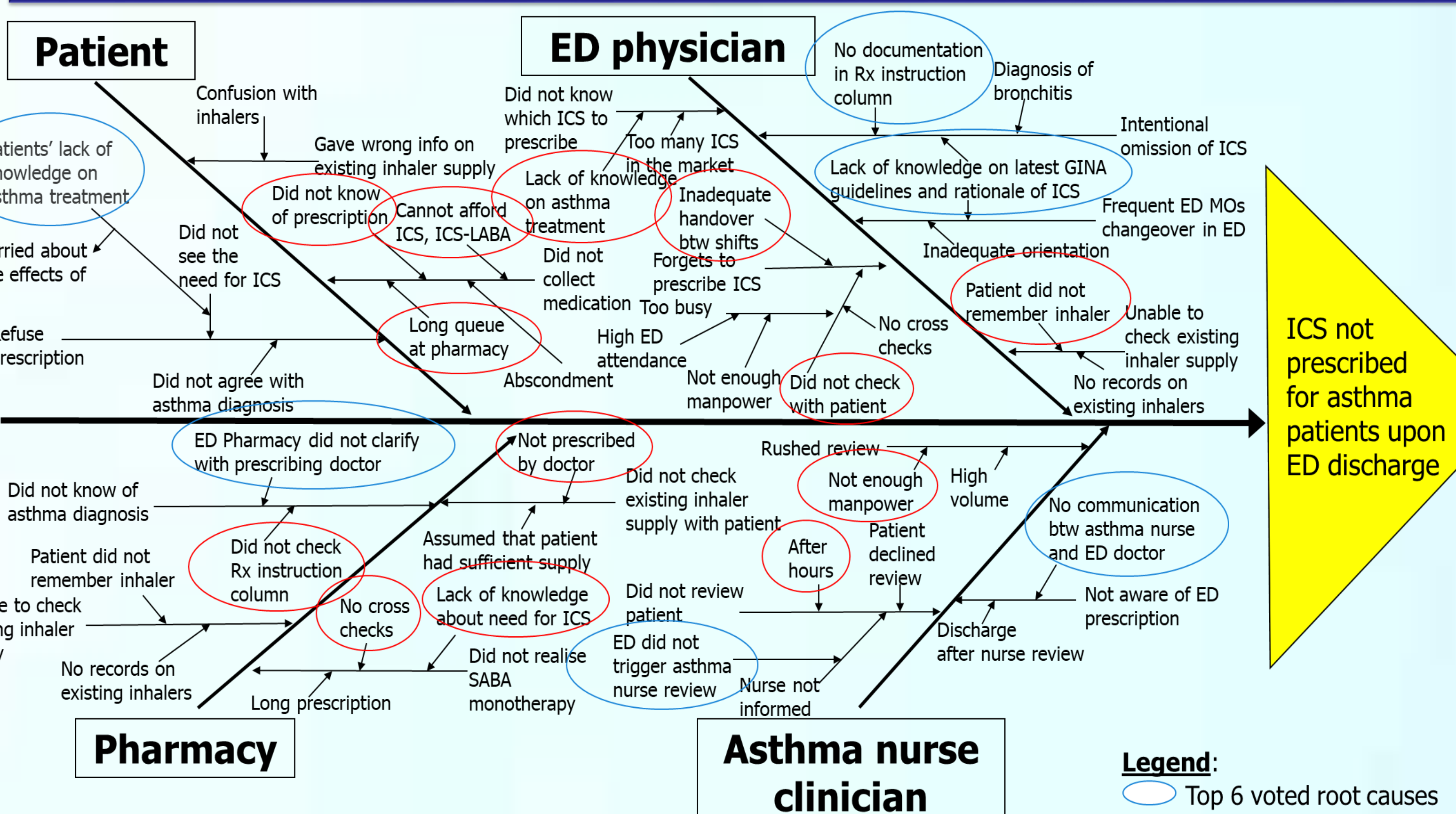
Short-acting beta agonist (SABA) has been first-line treatment for asthma for many years. Patients often do not see the need for regular inhaled corticosteroids (ICS). Since 2019, Global Initiative for Asthma (GINA) no longer recommends treating asthmatic adults with SABA only. All patients should receive ICS to reduce the risk of severe exacerbations. A local audit (2011-2015) showed that almost 1/3 of those admitted for severe life threatening asthma exacerbations were only on SABA. The prescription of ICS in asthma patients discharged from Emergency Department of TTSH was a median of only 79.3% from January to May 2019. Our TTSH data paled in comparison to NUH's data which showed a median of 100% ICS prescription for the year 2017.



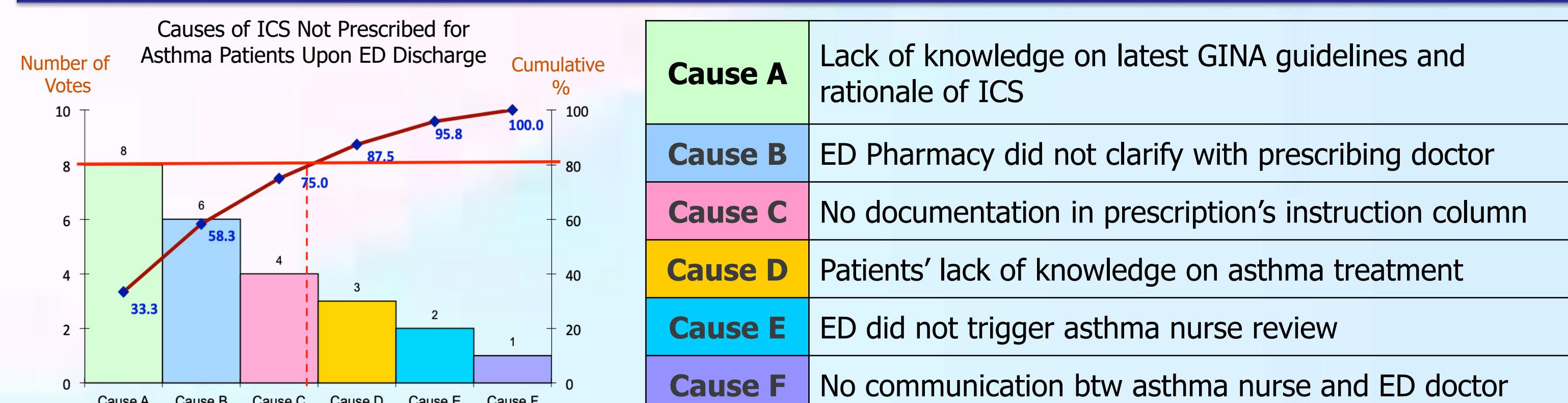
Flow Chart of Process



Cause and Effect Diagram



Pareto Chart



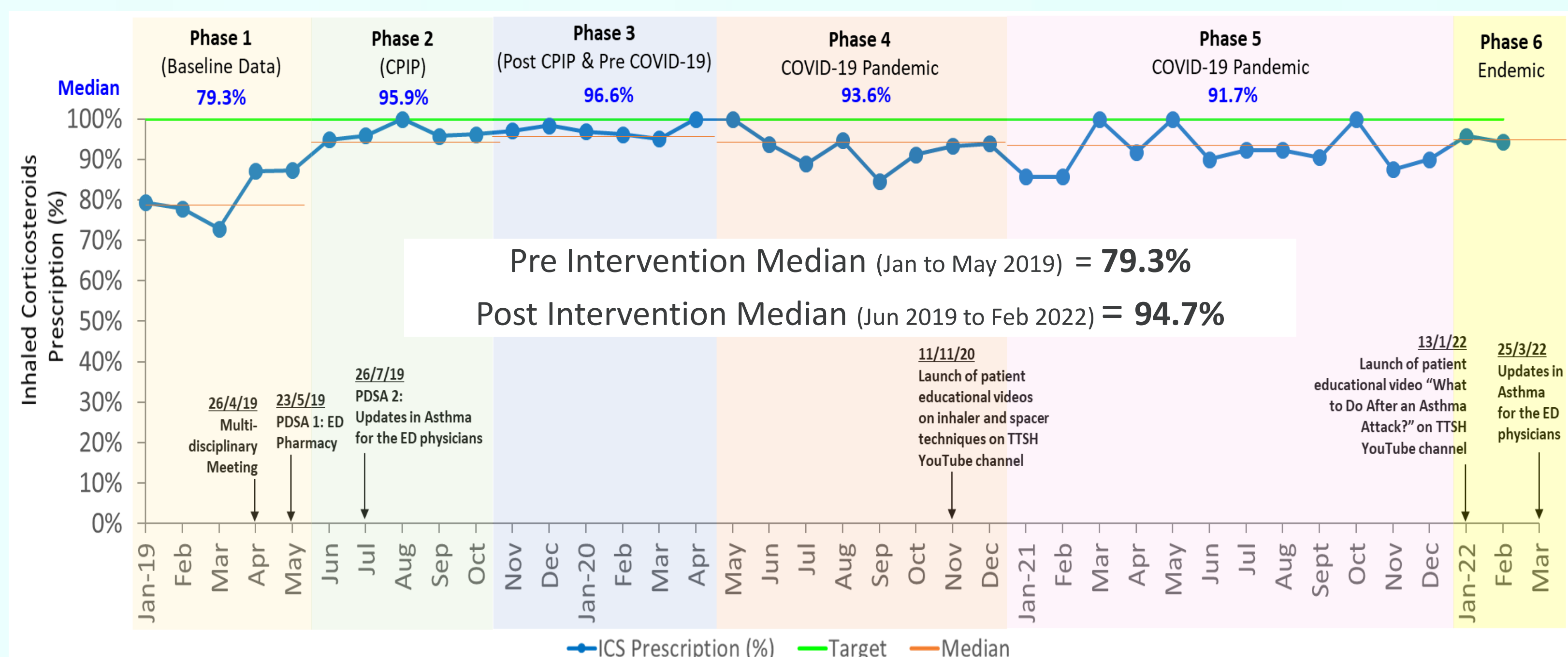
Implementation

| Root Cause | Intervention | Implementation Date |
|---|---|-------------------------------------|
| Cause B: ED Pharmacy did not clarify with prescribing doctor | ED pharmacy intervention | 23 May 2019 |
| Cause A: Lack of knowledge on latest GINA guidelines and rationale of ICS | Updates in Asthma for the ED physicians | 26 July 2019 25 March 2022 |
| Cause C: No documentation in prescription's instruction column | | |
| Cause D: Patients' lack of knowledge on asthma treatment | Asthma Educational Videos | 11 November 2020 13 January 2022 |

Results

Sustainability Phase: Runchart on Prescription of Inhaled Corticosteroids (ICS) in Asthma Patients Discharged from ED

Period: Jan 2019 to Feb 2022



| | Jan-19 | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan-20 | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan-21 | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan-22 | Feb |
|---|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|-----|
| No. of Inhaled Corticosteroids Prescribed | 65 | 53 | 51 | 54 | 55 | 56 | 47 | 49 | 45 | 50 | 66 | 63 | 63 | 60 | 39 | 23 | 22 | 15 | 24 | 18 | 22 | 31 | 28 | 31 | 30 | 18 | 14 | 33 | 7 | 9 | 24 | 24 | 19 | 16 | 14 | 18 | 23 | 33 |
| ED asthma discharges | 82 | 68 | 70 | 62 | 63 | 59 | 49 | 49 | 47 | 52 | 68 | 64 | 65 | 52 | 41 | 23 | 22 | 16 | 27 | 19 | 26 | 34 | 30 | 33 | 35 | 21 | 14 | 36 | 7 | 10 | 26 | 26 | 21 | 16 | 16 | 20 | 24 | 35 |

Cost Savings

- Number of ward bed days saved as a result of prevented hospital admissions for asthma over a 12-month period ranged from 93.6 to 148.8 days.
- Estimated cost savings from prevented hospital admissions for asthma over a 12-month period ranged from \$28,128 to \$37,440.
- Estimated cost savings from prevented reattendances at Emergency Department for asthma over a 3-month period ranged from \$896 to \$1,536.

Problems Encountered

- Prescribing ICS for all asthmatic patients is a paradigm shifting practice. Many physicians were still prescribing SABA monotherapy for asthma.
- Patient reliance on SABA is reinforced by its low cost and rapid relief of asthma symptoms. Patients often do not see the need for regular ICS and continue to rely on SABA for their asthma.
- The COVID-19 pandemic was a difficult period for TTSH with major impact on our number of ED attendances for asthma exacerbations, manpower allocation, and asthma education for both physicians and patients.

Strategies to Sustain

- Regular quarterly feedback of ICS prescription rates to ED pharmacy and ED physicians
- Regular updates in asthma for ED physicians by RCCM
- ED MO orientation pack and Asthma Policy & Procedure
- Asthma nurse clinicians to follow up with patients treated and discharged from ED (face to face review or telephonic call)
- Improve patient education - asthma discharge advice, videos on coping after an asthma attack and inhaler techniques.