Solutions for Patient Safety: Nephrotoxic AKI (SPS NAKI) Pioneer Cohort

September 2019

SPS: NAKI Pioneer Cohort

Nephrotoxic Medication Associated AKI (NAKI)

Nephrotoxic medication exposures (NTMx)

- Over 80% of patients have ≥ 1 NTMx
- ≥ 3 NTMx in 1 day associated with risk for AKI

NAKI

- Common cause of AKI in non-critically ill hospitalized children
  - ~ 25% of inpatients
  - Underestimated due to

    lack of systematic surveillance of kidney function in exposed pts

    non-oliguric nature of NAKI

Clinical significance of NAKI

Increased LOS, cost, risk of CKD

70% of children with NAKI had evidence of residual renal damage 6 mo later

6 mo post NAKI	NTMx w/ AKI	NTMx w/o AKI	p
eGFR (Cr) (ml/min/1.73 m^2)	113.8 (n =77)	123.4 (n =57)	0.04
< 60 (CKD Stage ≤3)	2	0	
60-90 (CKD Stage 2)	16	0	
90-150 (CKD Stage 1)	50	56	
>150 (Hyperfiltration)	9	1	
eGFR (Cys-C) (ml/min/1.73 m^2)	80.2	111.4	<0.01
U prot/cr	0.9	0.27	0.04
HTN	38%	19%	0.01

Early detection is key

Minimize nephrotoxins

Provide supportive care

NAKI Definitions

AKI definition (for this cohort)

↑ in creatinine at least 50% above baseline

Baseline creatinine = lowest creatinine in the past 6 months

Creatinine must reach 0.5 mg/dL to be called AKI

OR

An absolute ↑ L Q E D V H O L Q H V H U X P F U H D W L Q L Q 4 8 hours P J

regardless of max Cr

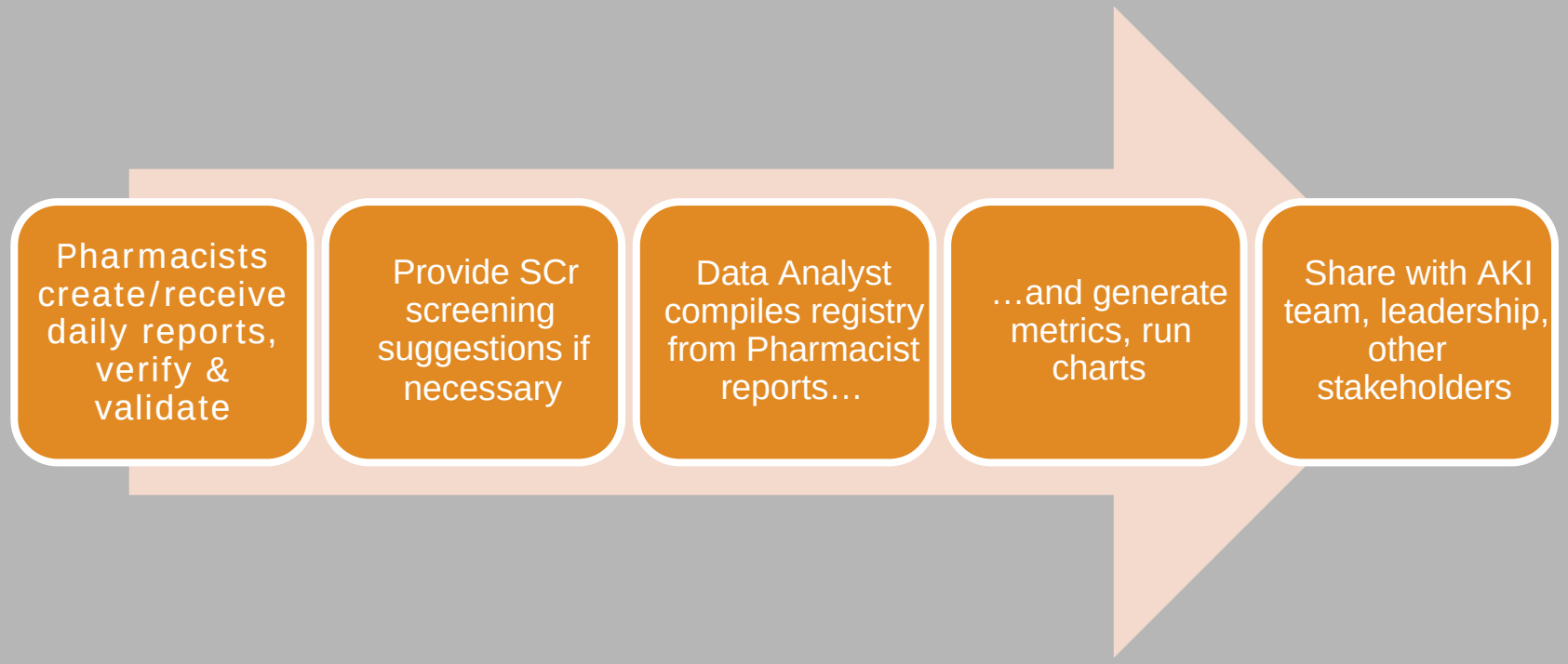
Weekly average AKI intensity rates measured as days in AKI by the pRIFLE per 100 days of high nephrotoxic medication (NTMx) exposure.

Stuart L. Goldstein et al. Pediatrics 2013;132:e756- e767

NAKI preliminary data – GCHaS (non-ICU pts)

	Dec 2018	Jan 2019	Feb 2019	Mar 2019	Apr 2019	May 2019	SPS data range
#NTMx exposures	26	23	33	20	20	35	
#NTMx w/ baseline sCr (%)	21 (81)	22 (96)	29 (88)	19 (95)	19 (95)	32 (91)	
#NTMx w/ daily sCr (%)	6 (23)	8 (35)	7 (21)	5 (25)	6 (30)	4 (11)	
#NAKI episodes	3	2	2	1	1	?	
% NTMx resulting in AKI	11.5	8.7	6	5	5		8 - 13%

The Process


Pharmacists create/receive daily reports, verify & validate
Provide SCr screening suggestions if necessary
Data Analyst compiles registry from Pharmacist reports…
…and generate metrics, run charts
Share with AKI team, leadership, other stakeholders

NAKI implementation at GCHaS

Inclusion

All non-ICU inpatients 7N/S, 8N/S

Exclusions: ESRD (SPS exclusion)

Pt in Wilmot Cancer Center and pts off tower (GCH exclusion)

PICU and PCCC pts

Monitor NICU pts for exposure but

NTM Exposure Algorithm

Pt meets exposure criteria

- Open encounter
- Check daily Cr during period of exposure and up to 48 hrs after last exposure

Pt meets AKI criteria

- Monitor daily Cr until back to baseline for 48 hrs *and no further exposure*
  - If still exposed continue daily Cr until 48 hr after last exposure

NAKI Implementation at GCHaS

Peds pharmacy to contact provider if pt meets exposure criteria

- Opportunity for education;
- Pharmacist will recommend creatinine monitoring & can place order if provider agrees
- Per NAKI surveillance, pt should have daily Scr monitored until
  - 48 hrs after exposure stops, *OR*
  - 48 hrs after AKI resolves, *OR*
  - Up to 28 days following AKI episode which does not resolve

Nephrologist to contact provider if sCr not ordered to explore barriers to daily sCr monitoring

Nephrotoxic Medications

Education and resources

- NAKI team
- Pharmacy
- Peds Nephrology website
- Peds ID website
  - Link to the list of nephrotoxic medications

GCHaS NAKI Team