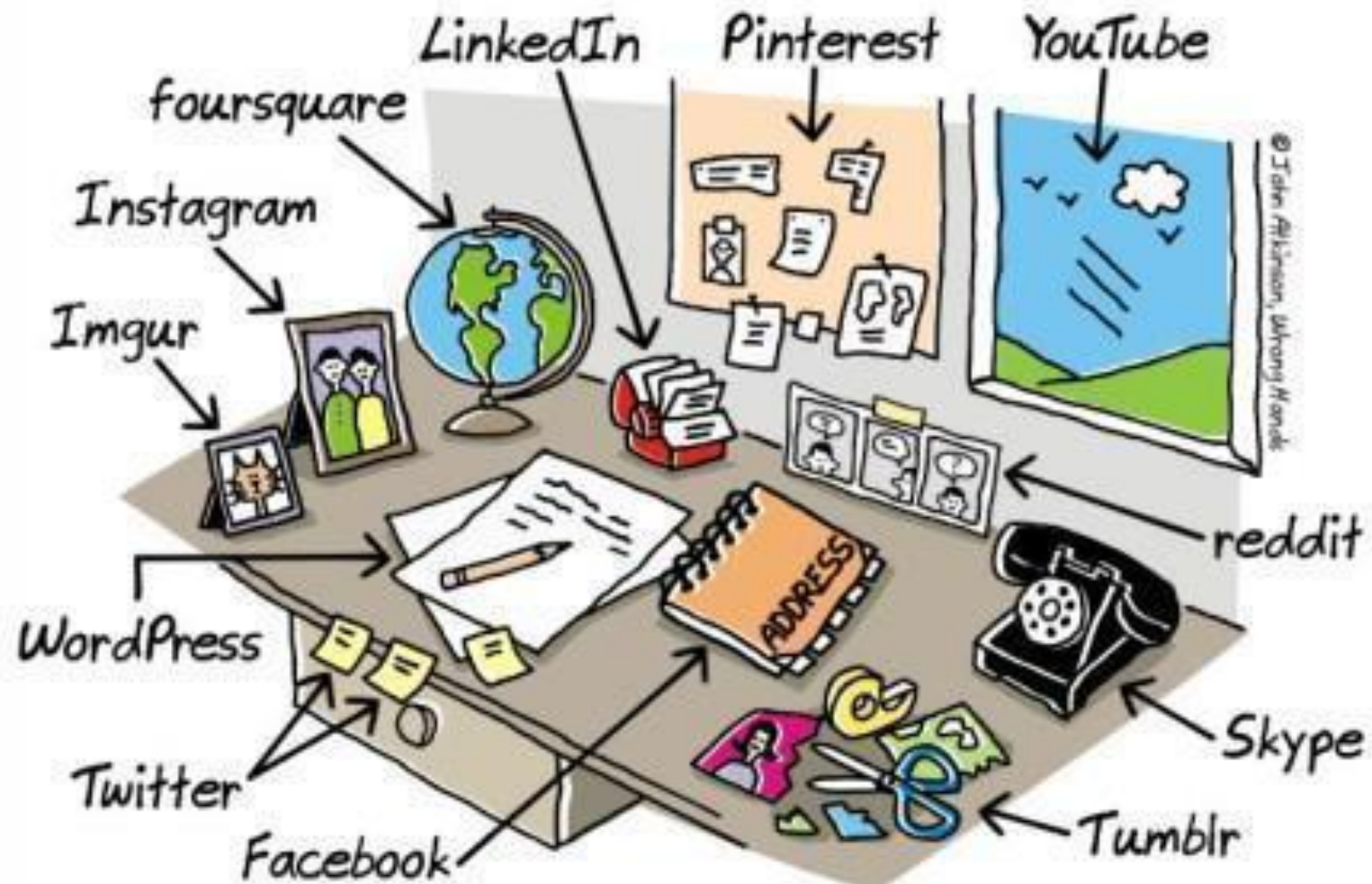


# Contrast Risk Workshop

Enhancing Clinical Decision Support for Prevention of Contrast-Induced Acute Kidney Injury in Cardiac Catheterization



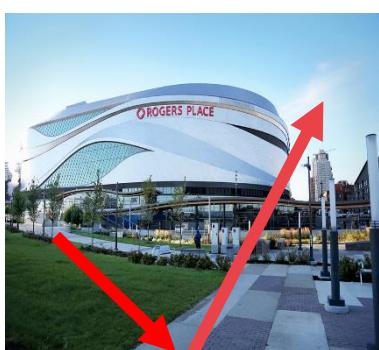
# vintage social networking



# Overview: the why, what and how of the project



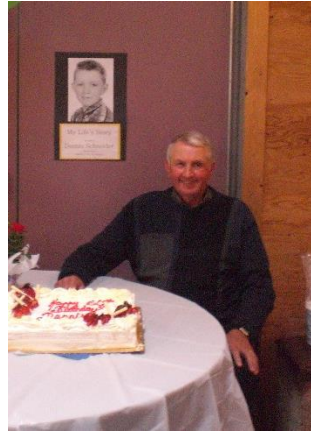
- **Why** should I listen (Background)?
- **What** do I need to know to do my job (implementation strategy)?
- **How** will it work and be implemented?
- Next steps and Questions

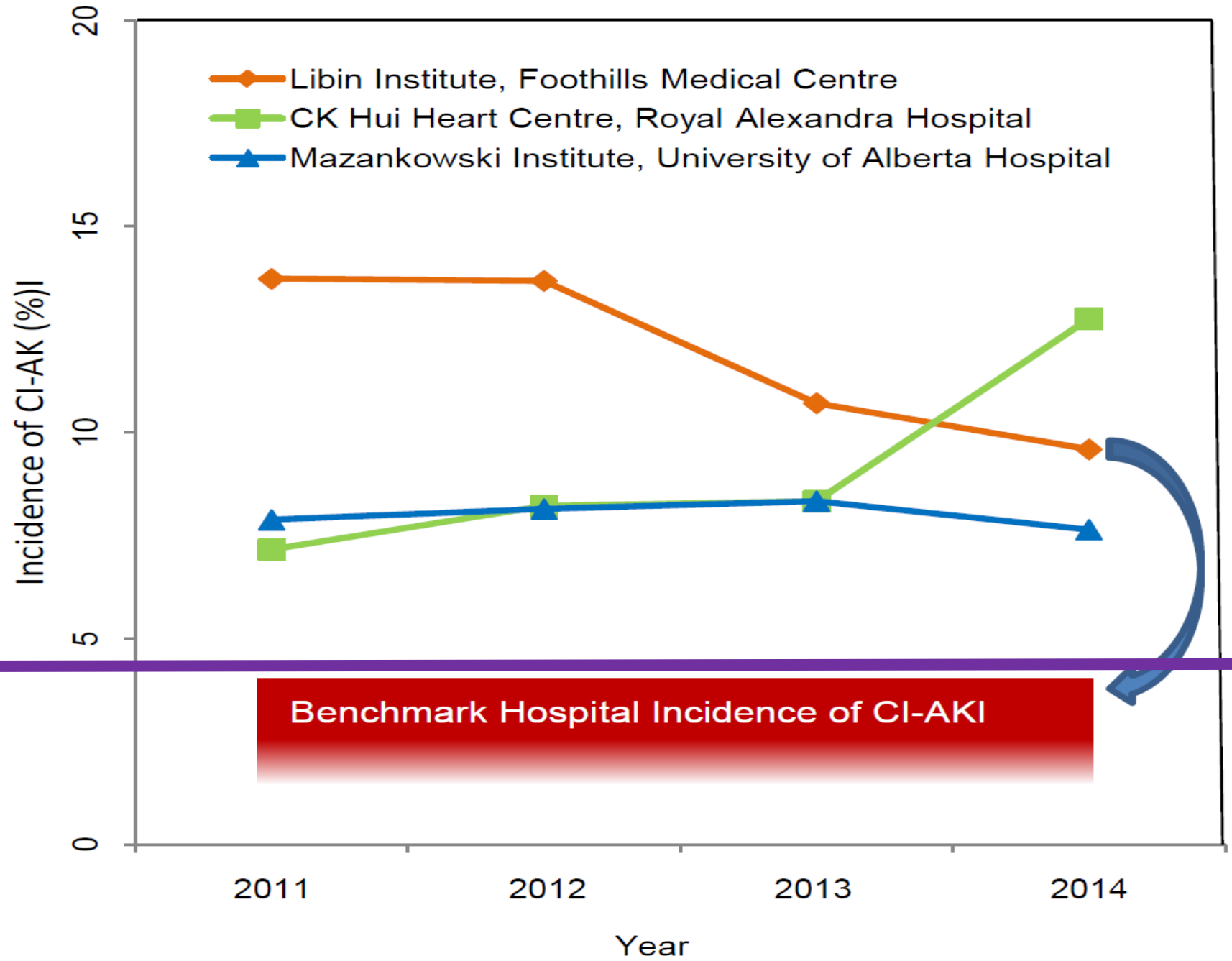


## By the end of the workshop you should:

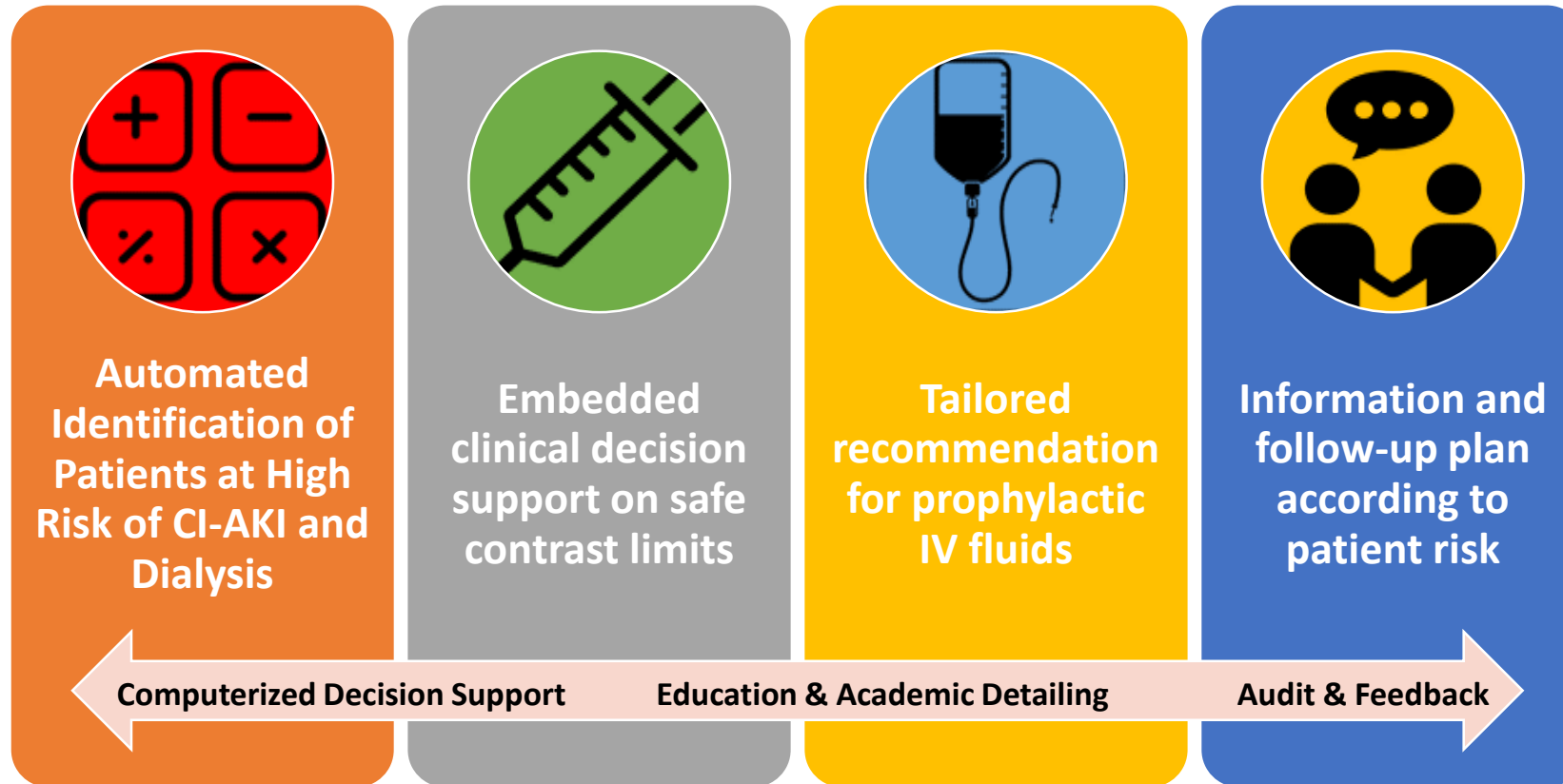


- Recognize four solutions for CI-AKI Prevention
- Gain insight into how the solutions will be implemented across the 3 sites in Alberta
- Understand the workflow, tools, and the changes you may encounter
- Be informed regarding the steps that lie ahead





# The What: Implementation Strategy





**implementation**

**plan**  
management

**retention**  
management  
impact  
opportunity  
retention

**process**  
cost  
identification  
management

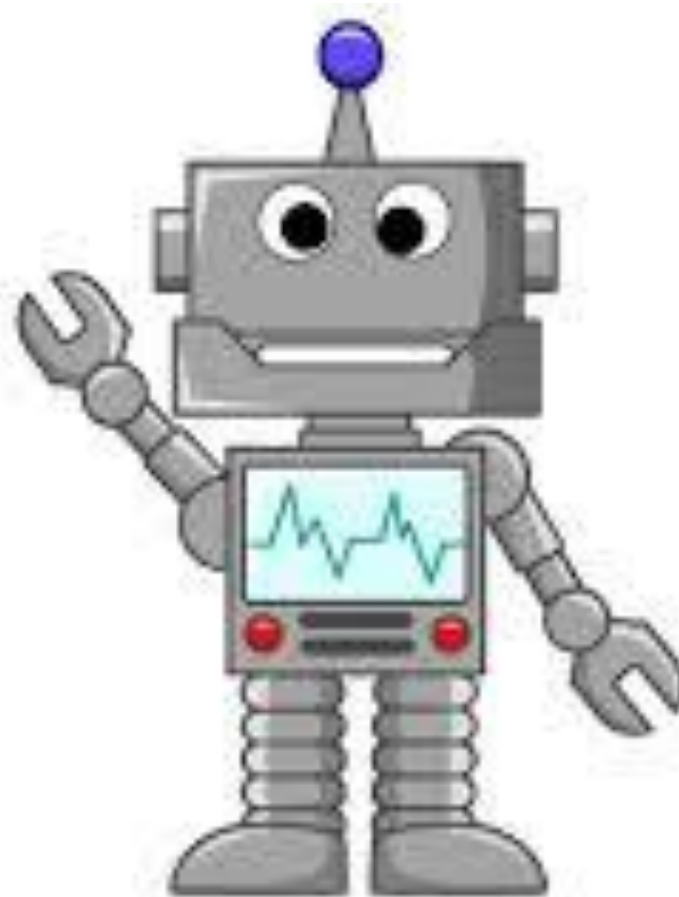
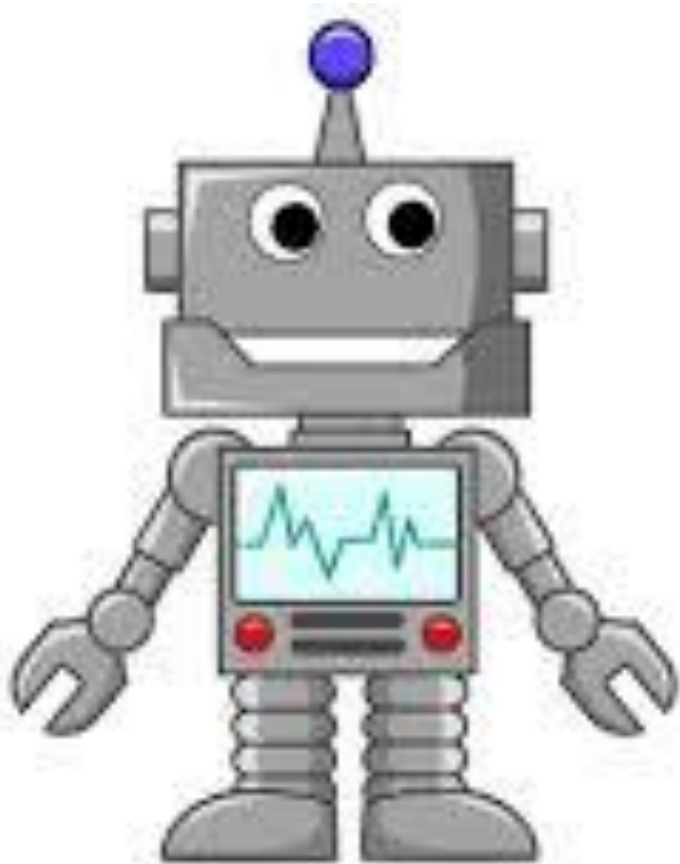
**resources**  
strategy  
research  
important  
organization

**risk**  
performance  
context  
evaluation  
scope

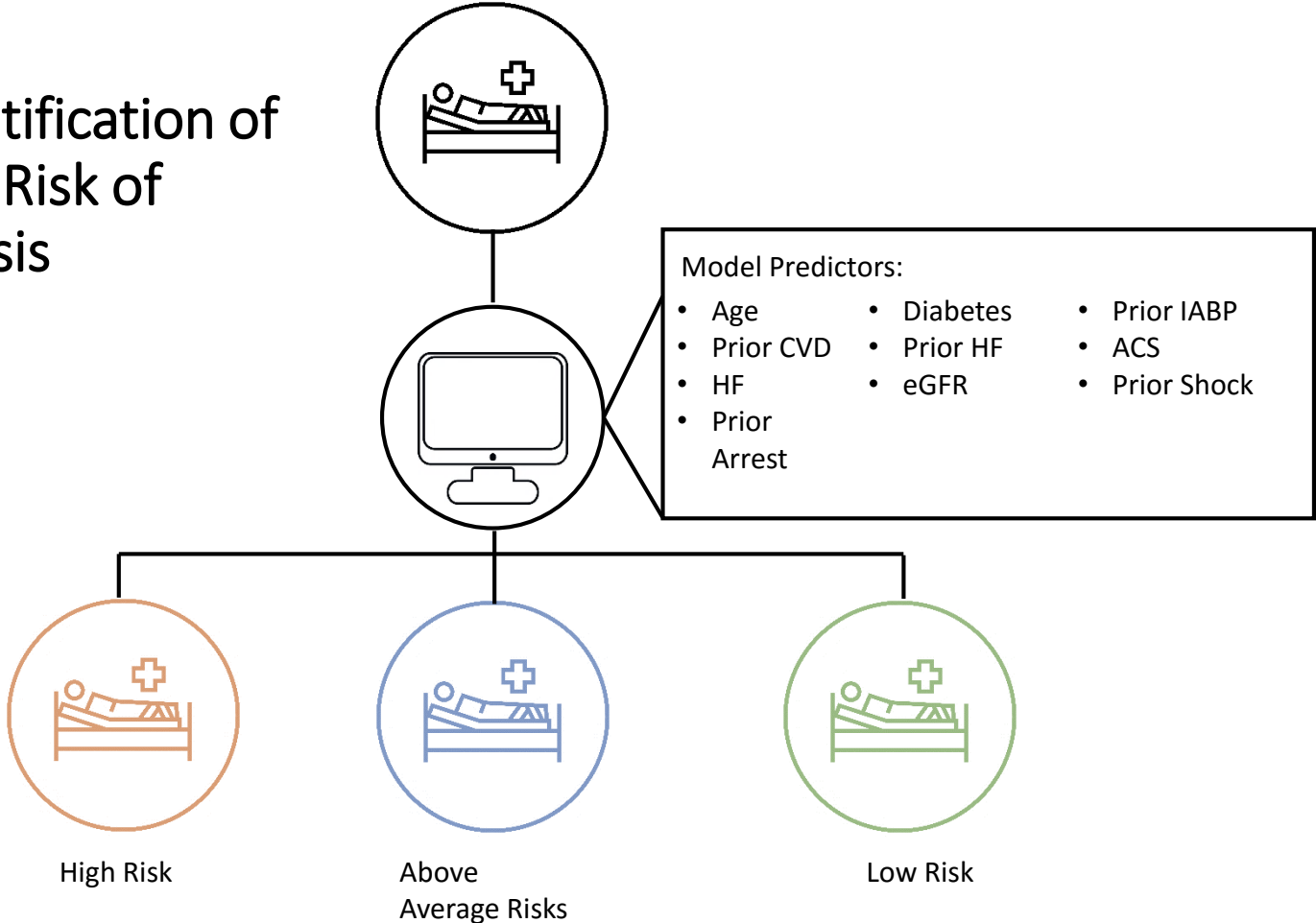
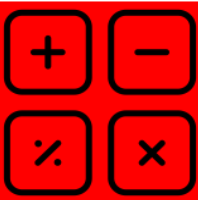
**context**  
evaluation  
scope  
plan  
sales  
project  
impact



# SPOT the Difference




# Automated Identification of Patients at High Risk of CI-AKI and Dialysis



# Approach Online

[Patient Search / Add](#)
[Change My Password](#)
[About Us](#)
[Help](#)


DOB 01-Jan-1

AB, CA GP: ... Patient Identifiers Allergies Unknown

[Main Cath](#)
[EMS](#)
[Indication](#)
[Factors Pre](#)
[Tests](#)
[ECG](#)
[Clinical Factors](#)
[PriorHx](#)
[Meds](#)
[Labs](#)
[InLab Meds](#)
[Valvular](#)
[InLab Comps](#)
[Proc Data](#)
[Right Heart](#)
[Observations](#)
[CC](#)
[Discharge](#)
[Discharge2](#)

## Cath - Main Page

**Cath Date \*** 07-Sep-2017 09:38 Proc. Consent  Y  N  ? Visit No

**Height**  cm **Weight**  kg  
**BMI: 0.0** **BSA: 0.0 m<sup>2</sup>**

**Procedure Start**  **Procedure End**  **CD**  **CLN**


**Cathing Facility** FMC **Unit** Cath Lab **CCS Class**  **NYHA**  **Priority \*** Urgent In Hospital/Transf

**Occupation**

**Work Status** Not Entered **Quality of Life** Not Entered **Postal Code** X0X 0X0

**Referral Date**

**Research Protocols**



**Location Tracking**

Date	Location	Unit
07-Sep-2017 09:38	Airdrie	ED

**Referring Physician**

**Resident**  Y  N

**Personnel \***

Role	Name
Performing Cardiologist	Anderson, Todd
Assisting Cardiologist	<input type="text"/>
Interventional Fellow	<input type="text"/>
Cathing User	<input type="text"/>

## ePRISM® Data input variables for Acute Kidney Injury / Dialysis Predictive Models

- AKI Pre-Procedure no contrast - The patient's risk of AKI

- AKI Target Risk - The desired contrast level to reduce the risk of AKI

- Dialysis Pre-Procedure no contrast - The patient's risk of Dialysis

Age in years \*

Sex at birth \*

Race-Black or African American \*

 Y  N

Indications:

CAD Presentation \*

Factors Pre:

Cardiac Arrest \*

 Y  N

Cardiogenic Shock \*

 Y  N

IABP \*

 Y  N

Clinical Factors:

History of Heart Failure \*

 Y  N

Heart Failure within 2 weeks \*

 Y  N

Diabetes \*

 Y  N

History of Cerebrovascular Disease \*

 Y  N

Labs:

Most Recent Serum Creatinine ( $\mu\text{mol/L}$ ) \*

Creatinine (mg/dL)

Most Recent Hemoglobin (g/L) \*

Hemoglobin (g/dL)

Save and Calculate Risk

Cancel

ePRISM® Data input variables for Acute Kidney Injury / Dialysis Predictive Models

- AKI Pre-Procedure no contrast - The patient's risk of AKI
- AKI Target Risk - The desired contrast level to reduce the risk of AKI
- Dialysis Pre-Procedure no contrast - The patient's risk of Dialysis

Age in years \*

Sex at birth \*

Race-Black or African American \*  Y  N

Indications:

CAD Presentation \*

Factors Pre:

Cardiac Arrest \*  Y  N

Cardiogenic Shock \*  Y  N

IABP \*  Y  N

Clinical Factors:

History of Heart Failure \*  Y  N

Heart Failure within 2 weeks \*  Y  N

Diabetes \*  Y  N

History of Cerebrovascular Disease \*  Y  N

Labs:

Most Recent Serum Creatinine (µmol/L) \*

Most Recent Hemoglobin (g/L) \*

You have changed this value from what is currently in the database.  
This field will be updated in the database when you select Save and Calculate.

### Cath - Main Page

Cath Date \* 07-Sep-2017 11:42 Proc. Consent  Y  N  ? Visit No  Height  cm Weight  kg  
BMI: 0.0 BSA: 0.0 m<sup>2</sup>

Procedure Start  Procedure End  CD  CLN

Cathing Facility Unit CCS Class NYHA Priority \*  
FMC Cath Lab   Urgent Out of Hospital

Occupation

Work Status Not Entered Quality of Life Not Entered Postal Code X0X 0X0

Referral Date

Research Protocols

Acute Kidney Injury / Dialysis	07-Sep-2017 14:51
Risk of AKI	3.34% <b>Low Risk</b>
Risk of Dialysis	0.05%

[Main Cath](#) | [EMS](#) | [Indication](#) | [Factors Pre](#) | [Tests](#) | [ECG](#) | [Clinical Factors](#) | [PriorHx](#) | [Meds](#) | [Labs](#) | [InLab Meds](#) | [Valvular](#) | [InLab Comps](#)

### Cath Main Page

Cath Date \* 07-Sep-2017 11:42 | Proc. Consent  Y  N  ? | Visit No. [ ] | Height [ ] cm | Weight 65 kg | BMI: 0.0 | BSA: 0.0 m<sup>2</sup>

Procedure Start [ ] | Procedure End [ ] | CD [ ] | CLN [ ]

Cathing Facility: FMC | Unit: Cath Lab | CCS Class [ ] | NYHA [ ] | Priority \* Urgent Out of Hospital

Occupation [ ]

Work Status: Not Entered | Quality of Life: Not Entered | Postal Code: X0X 0X0

Referral Date [ ] | [Link Referral](#) | [Remove Referral Link](#)

Research Protocols [ ]

---

[Calculate ePRISM® AKI Risk](#) | [ePRISM® AKI Risk History](#)

Acute Kidney Injury / Dialysis: 07-Sep-2017 14:53

Risk of AKI: 5.27% Above Average

To reduce risk of AKI, limit contrast to: 108 cc

Risk of Dialysis: 0.11%

### Cath - Main Page



Cath Date \* 
 Proc. Consent  Y  N  ?

Visit No 
 Height  cm
 Weight  kg
 BMI: 0.0 BSA: 0.0 m<sup>2</sup>

Procedure Start 
 Procedure End 
 CD 
 CLN

Cathing Facility 
 Unit 
 CCS Class 
 NYHA 
 Priority \*

Occupation

Work Status 
 Quality of Life 
 Postal Code

Referral Date

Research Protocols

Location Tracking

Date	Location	Unit
07-Sep-2017 11:42	Banff	CCU

Referring Physician

Resident  Y  N

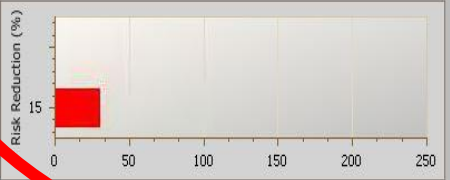
Personnel \*

Role	Name
Assisting Cardiologist	<input type="text"/>
Interventional Fellow	<input type="text"/>
CathLab User	<input type="text"/>
CathLab User	<input type="text"/>

Acute Kidney Injury / Dialysis

Risk of AKI 68% High Risk

To reduce risk of AKI, limit contrast to: 30 cc



Risk of Dialysis 1.62%



Cath Procedural Data

Access Sites

Access Type	Access Site	French Size	Successful
No data to display			

Add New

Extent of Native Coronary Artery Disease  Instent Thrombosis  Y  N  NA Angiographers' Initial Recommendation

LVEF - Angiography

Calc (%)  Estimate  Reason Calc Not Possible

LVEDP (mm Hg)  Recommended LVEDP directed post-procedure IV fluid administration (mL/kg/hr)  Rate (mL/hr)

Weight  kg

Prescribed post-procedure IV fluid orders in adherence with LVEDP fluid recommendations  Y  N Why not adhered to LVEDP fluid recommendations?

Mean PA (mm Hg)  Radiation Dose (mGy)  Total DAP(cGycm2)

Fluoro Time (min)

Contrast Minimization Strategies  Avoid LV/Aortogram  Rotational or biplane angiography  Stage PCI

Dye 1 Vol(cc)  Dye 1 Type  Dye 2 Vol(cc)

Dye 2 Type  Tot. Dye Vol(cc)

Pre BP (mm Hg)  /  Pre HR (bpm)  Post BP (mm Hg)  /  Post HR (bpm)

IABP  Y  N Impella  Y  N

Other MCS  Y  N

Carat Completed  Y  N Procedure Completed  Y  N

Lock Interface Updates

Procedures Completed

Procedures Category  Adjunct  Diagnostic  Non-coronary - Congenital  Non-coronary - Structural  Peripheral Interventions  Other

Procedure Type  Coronary Angiogram  Left Heart Cath  LV Angiogram  Graft Angiogram  Radial Angiogram  TIA/Carotid Angiogram

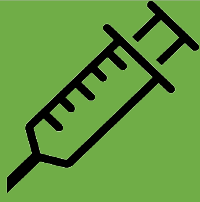
Counts

Device

None

Closure Device  Patient Discharged To

Mean PA (mm Hg)	Radiation Dose (mGy)	Total DAP(cGycm2)	Closure Device	Patient Discharged To
<input type="text"/>	<input type="text"/>	<input type="text"/>	None	<input type="text"/>
Fluoro Time (min)	Contrast Minimization Strategies	Dye 1 Vol(cc)		
<input type="text"/>	<input type="checkbox"/> Avoid LV/Aortogram	0		
	<input type="checkbox"/> Rotational or biplane angiography			
	<input type="checkbox"/> Stage PCI			
Dye 1 Type	Dye 2 Vol(cc)	Dye 2 Type		
<input type="text"/>	0	<input type="text"/>		
Tot. Dye Vol(cc)				
0				



[Main Cath](#) | [EMS](#) | [Indication](#) | [Factors Pre](#) | [Tests](#) | [ECG](#) | [Clinical Factors](#) | [PriorHx](#) | [Meds](#) | [Labs](#) | [InLab Meds](#) | [Valvular](#) | [InLab Comp](#)

### Cath Procedural Data

**Access Sites**

Access Type	Access Site	French Size	Successful
No data to display			

Extent of Native Coronary Artery Disease:    
 Instant Thrombosis:  Y  N  NA   
 Angiographers' Initial Recommendation:

**LVEF - Angiography**  
 Calc (%):    
 Estimate:  Not Entered   
 Reason Calc Not Possible:

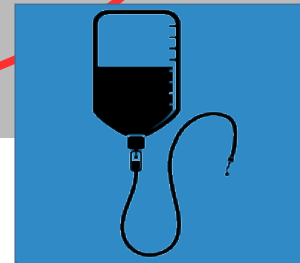
LVEDP (mm Hg):  3   
 Recommended LVEDP directed post-procedure IV fluid administration (mL/kg/hr):  5 ml/kg/hr for LVEDP < 13 mm Hg   
 Rate (mL/hr):  325

Weight:  65  kg

Prescribed post-procedure IV fluid orders in adherence with LVEDP fluid recommendations:  Y  N

Why not adhered to LVEDP fluid recommendations? \*

- Lock Interface
- Procedures Completed
- Procedures Category
  - Adjunct
  - Diagnostic
  - Non-coronary
  - Non-coronary
  - Peripheral Intervention
  - Other
- Counts
  - Device
- Closure Device
  - None



Case (70)

Estimate

Reason Case Not Entered

**LVEDP (mm Hg)**

**Reason unable to obtain LVEDP**

**Prescribed post-procedure IV fluid orders in adherence with LVEDP fluid recommendations**

 Y  N

**Why not adhered to LVEDP fluid recommendations? \***

Patient Information After X-Ray Contrast Administration

Date: \_\_\_\_\_

**Dear Patient:**

Today you received an x-ray contrast dye during your heart procedure.

You are at risk for a drop in your kidney function due to this dye.

For this reason, you have been given a laboratory requisition to have a blood test in 2-3 days from today to check your kidney function. The results of this test will be sent to your doctor (usually your family doctor).

You can take the following steps to minimize the effects of the dye on your kidneys:

1. Drink plenty of clear fluids (6-8 glasses of water per day) on the day of and 2 days following your procedure, unless otherwise directed by your doctor who did your procedure.
2. Please take the laboratory requisition to a laboratory of your choice in 2 to 3 days from today to have blood work drawn to check your kidney function.
3. Follow-up with your family doctor to review your bloodwork to determine whether there has been any changes to your kidney function.
4. Even if you have any concerns or are feeling unwell in any way, please contact your family doctor.

Sincerely  
Site name  
Hospital name  
Phone number





Patient Identifier

Physician Name: \_\_\_\_\_  
Physician Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Your patient received cardiac catheterization on \_\_\_\_\_ (date) and was identified as being at risk of contrast-induced acute kidney injury.

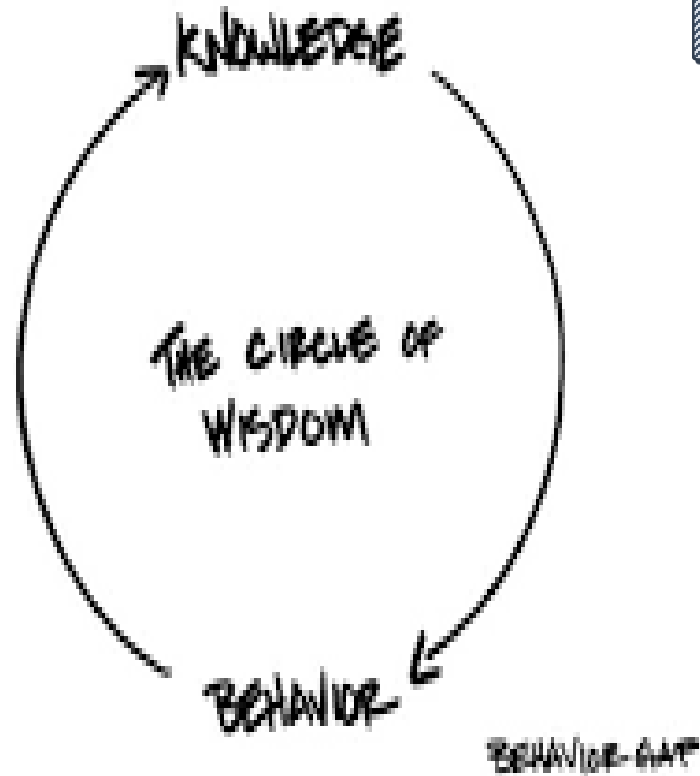
Your patient has been given a requisition for a serum creatinine level to be checked 2 to 3 days after the procedure and these results will be sent to you. It has been recommended to your patient that they see you within a week after their procedure, including follow-up of their kidney function.

Information and the management and referral of patients identified with kidney disease can be found on the Alberta online chronic kidney disease clinical pathway at:

[www.diagnoseckd.ca](http://www.diagnoseckd.ca)

Sincerely,

Site name  
Hospital name  
Phone number



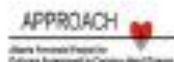
## Managing the Transition

- Communication
- Adaptability
- Support
- Action
- Knowledge

# Resources available:



Version 1 as of June 15, 2017



## CONTRAST INDUCED APPROACH CHEAT SHEET

Step by Step procedure:

### Pre Procedure

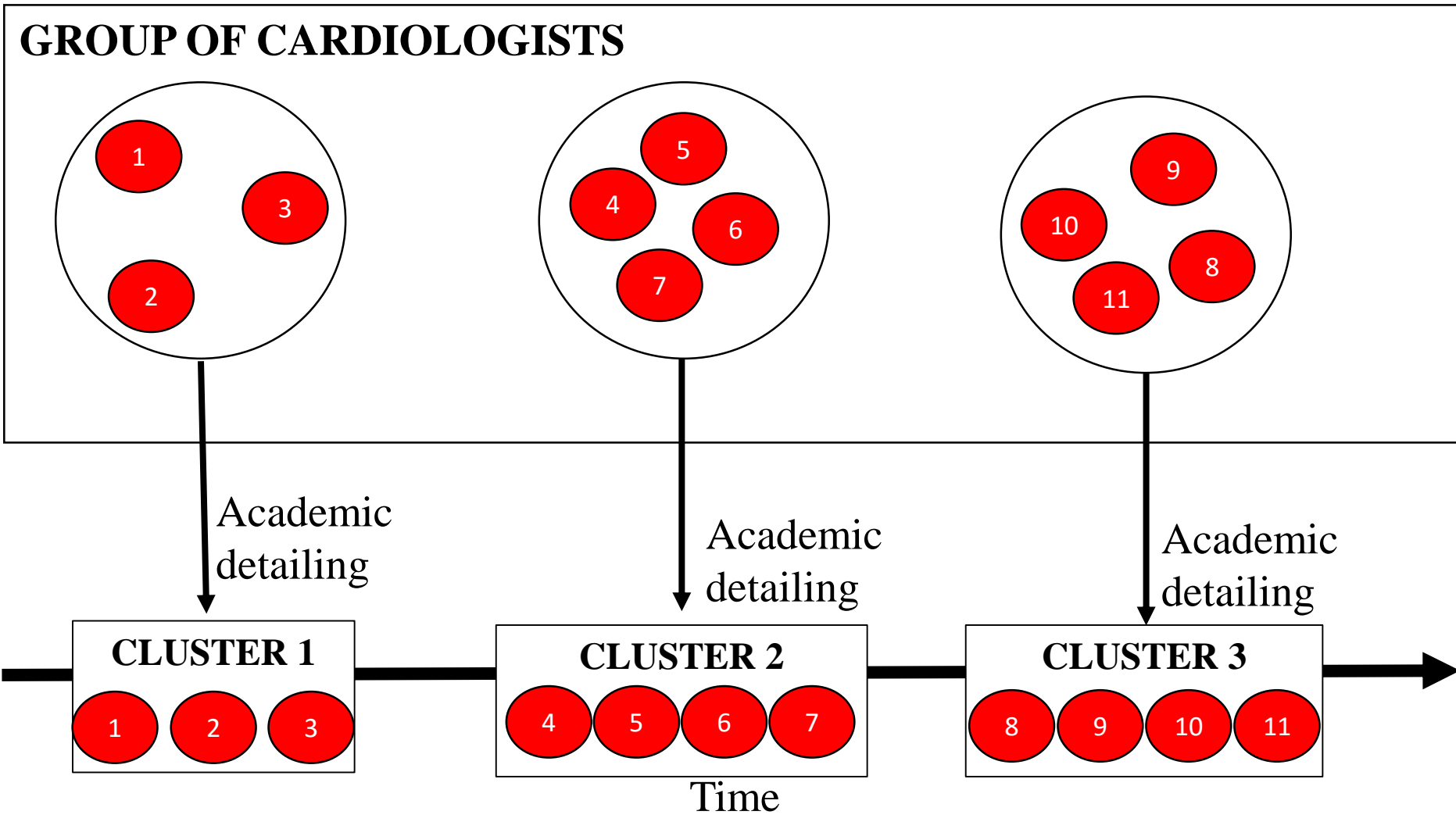
- 1) **Review and Update** any data elements on the AKI risk Popup Window if required
- 2) **Save and Calculate Risk button** to execute risk of AKI, Risk of Dialysis and Safe contrast limit displayed on main page
- 3) **Safe contrast limits** will only be displayed if the AKI risk calculator identifies that the patient is ABOVE average or High-Risk
- 4) **Communicate** the safe contrast volume limit to the cardiologist PRIOR to the start of the procedure
- 5) **Inform** the cardiologist at the time the safe contrast limit is reached - The cardiologist will decide to continue or end the case at their discretion
- 6) **Enter actual contrast volume used**, along with any strategies used to minimize contrast volume
- 7) **Enter LVEDP and Weight** manually into APPROACH in order to obtain the recommend post procedure IV fluid order
- 8) **Communicate the recommended IV rate** to the cardiologist who will determine to follow or not follow the recommendation. If not following the recommendation enter reason into APPROACH



## Next Steps:

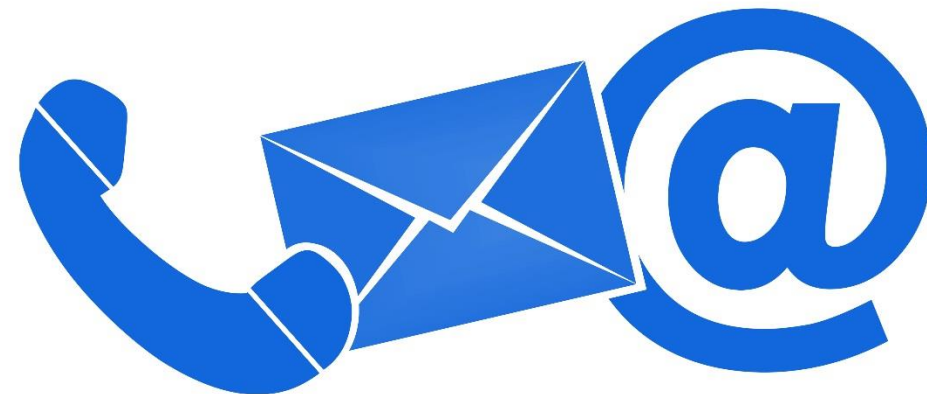
- Survey
- Knowledge Sharing
- Pilot
- Implement







# Contact us:



## Need Help after today?

- Pantea Amin Javaheri, project coordinator, is available for one-on-one or group training, she can also attend staff meetings as needed (contact info)

## Do you have any questions or comments?

- If you have questions or comments regarding APPROACH, please email them at [support@approach.org](mailto:support@approach.org) and in the subject line put: *AHS QA for AKI*
- If you have questions about the presentation or project please contact



