Let’s Write!

An Introduction to Technical Writing in Dialysis

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Cultivate and Nurture Your Dialysis Career

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Objectives

- Define technical writing
- Dispel some writing myths
- Review steps to begin writing
- Explore examples for:
  - Presentation
  - Skills checklists
  - Job Aids/Training materials
  - Policies and procedures
  - Plan of correction
  - Plan of care
- Identify resources

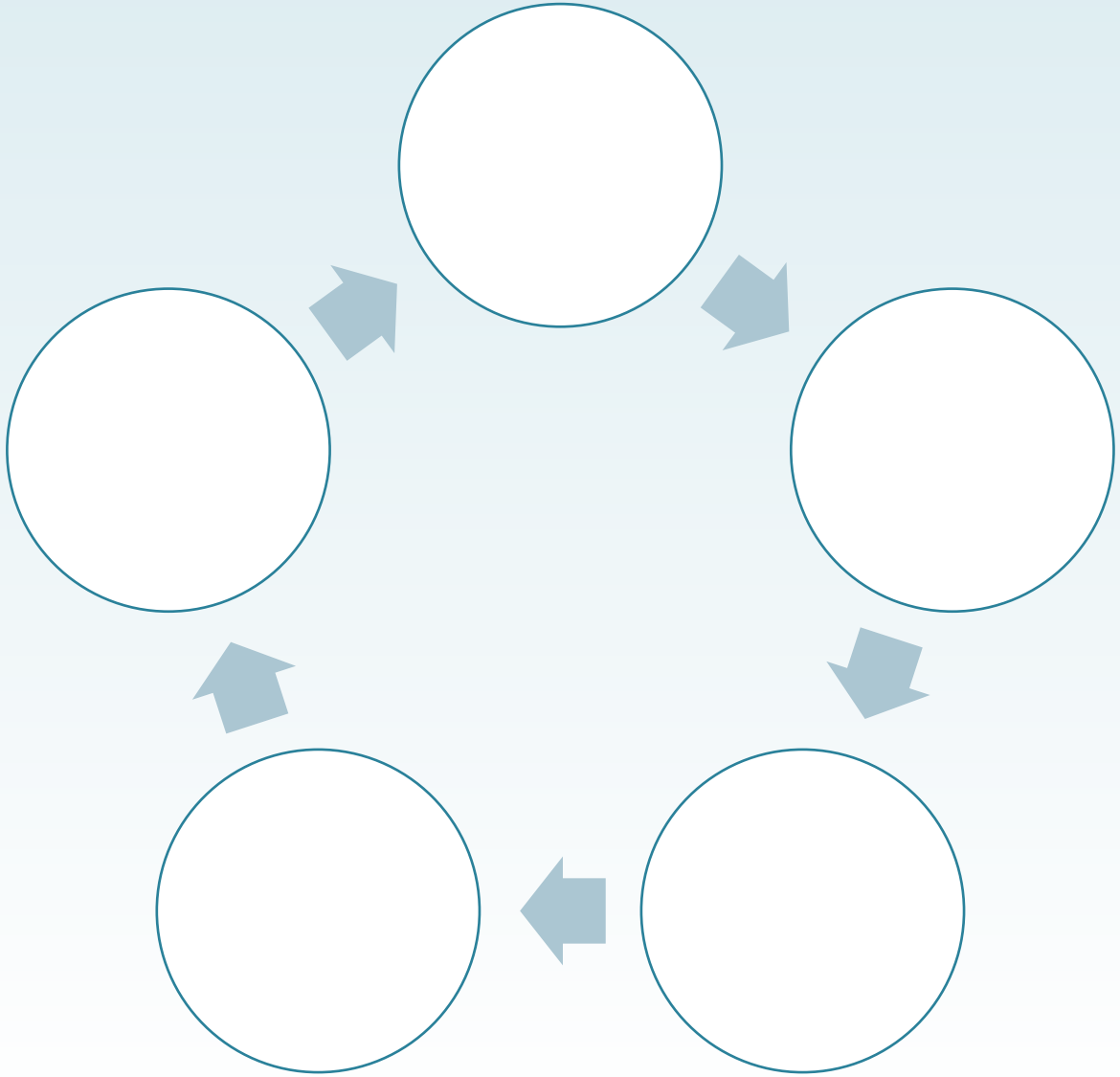
Do you like writing or does writing cause stress?

Technical Writing

What is Technical Writing?

Technical writing is a type of writing where the author is writing about a particular subject that requires direction, instruction, or explanation.

Technical Writing in Dialysis

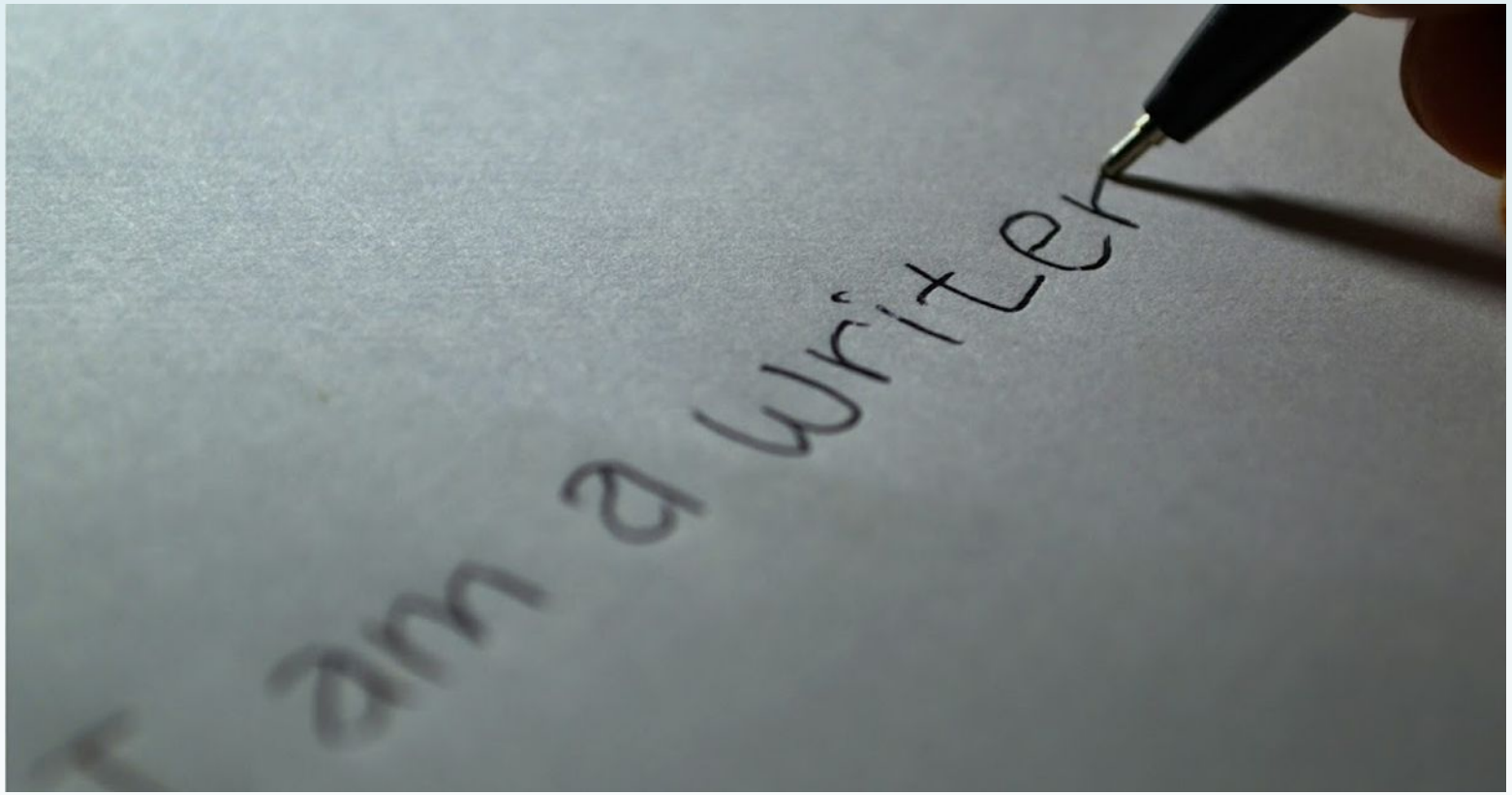


Plain Language Strategy

- Using simple language
- Define technical terms
- Using active voice
- Break down complex information into understandable pieces
- Organize the most important points first

Myth- *Writing is Easy!*

Myth- *Only Creative People are Good at Writing!*



Myth- *Writing Does Not Require Planning!*

Is writing easy?

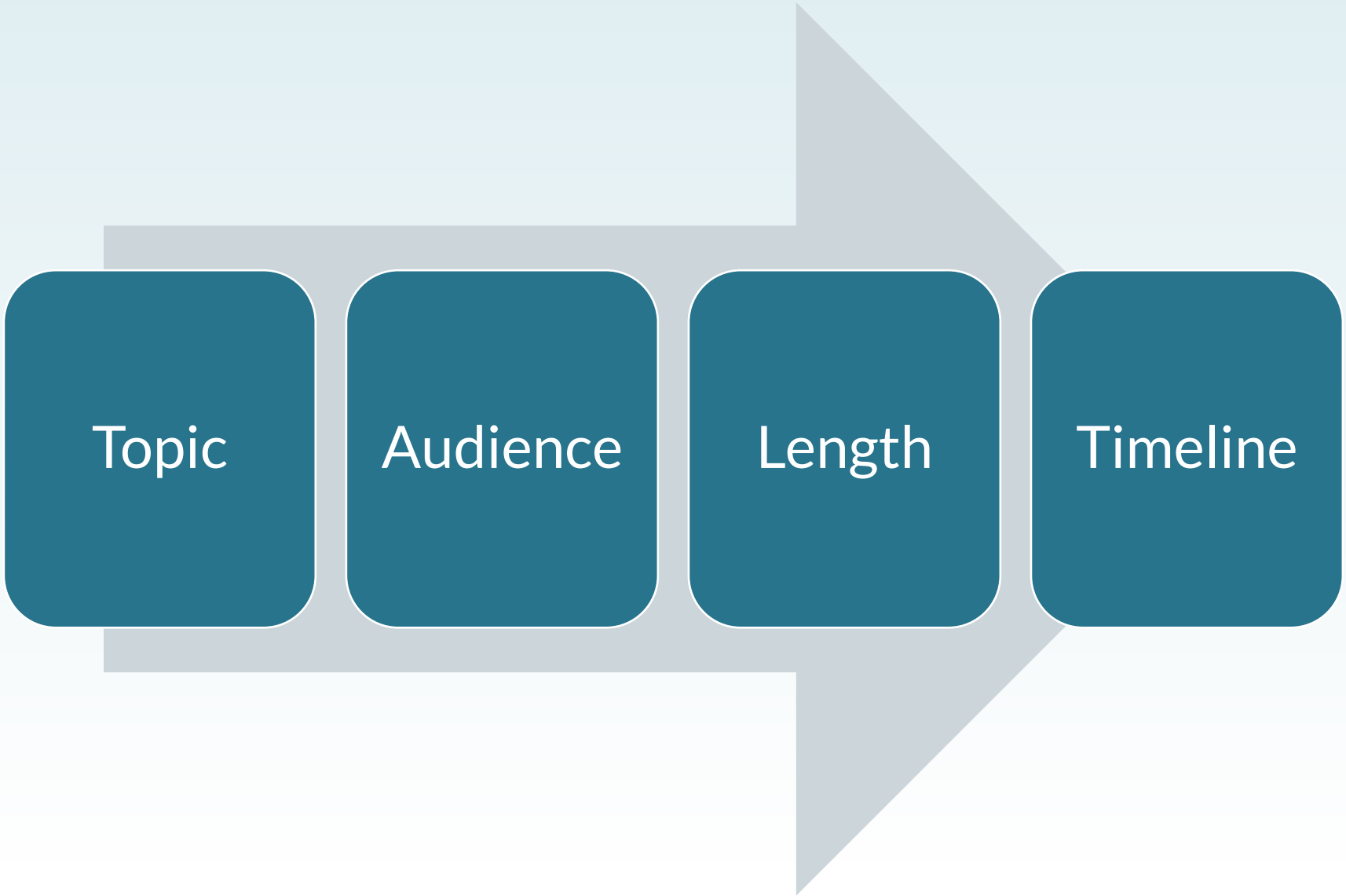
Where to Start?

Determining the Purpose

- Why am I writing?
  - **Presentation**
  - **Plan of care**
  - **Plan of correction**
  - **Skills checklists**
  - **Job Aids/Training materials**
  - **Policies and procedures**

  - *Notes/Documentation*
  - *Email*
  - *Texts*

Gathering Information



Next- Creating an Outline

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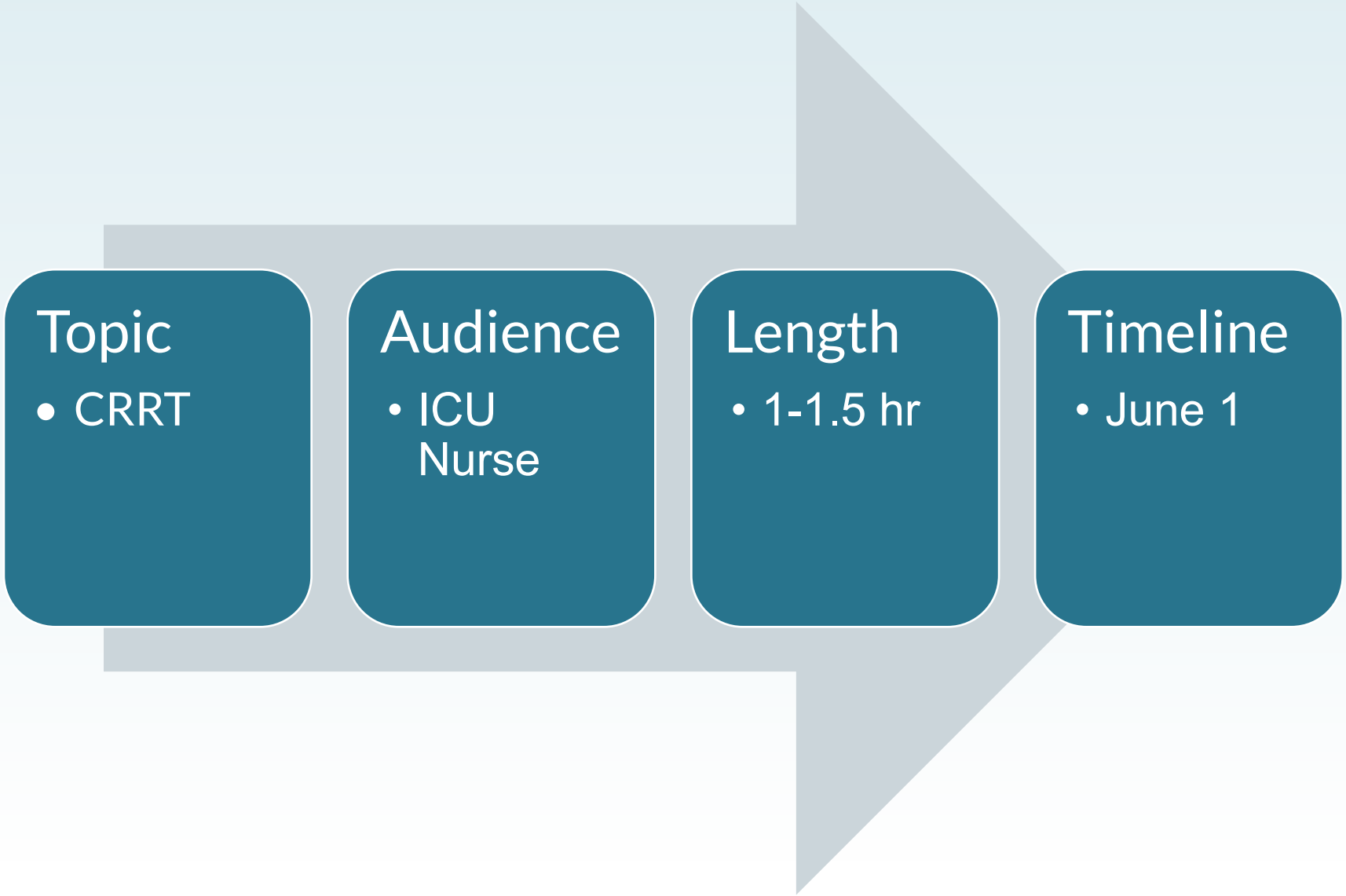
Presentation Sections

- Introduction
  - Opening
- Body
  - Supporting information
  - Closing
- Conclusion
  - Include resource list if applicable

Do you need an outline for writing projects?

Presentation Writing

Gather Information –Presentation Example



Basic Outline for Presentation- Example

- Introduction
  - Define CRRT/criteria for use/when to start
  - Identify Goals of CRRT/Advantages of CRRT
- Body
  - Define Therapy Options/Principles of CRRT
  - Review Care Process/Identify Nursing Responsibilities
  - Review Potential Patient Complications
  - CRRT Machines- common alarms/troubleshooting
- Conclusion

CRRT Education and Training Presentation- Example

- Develop draft
- Reviewers (for feedback)
  - Clinical individuals familiar with the machine and modality
- Revisions
  - Spelling/grammar/terminology
- Legal/Compliance/Risk
- Final Review
- Project Ready

Presentation Formatting Considerations

- FONT STYLE/color and size
- Design/consistent look
- Amount of content on slide
- Spelling/grammar
- References
- Copyrights for pictures/diagrams
- Speaker notes

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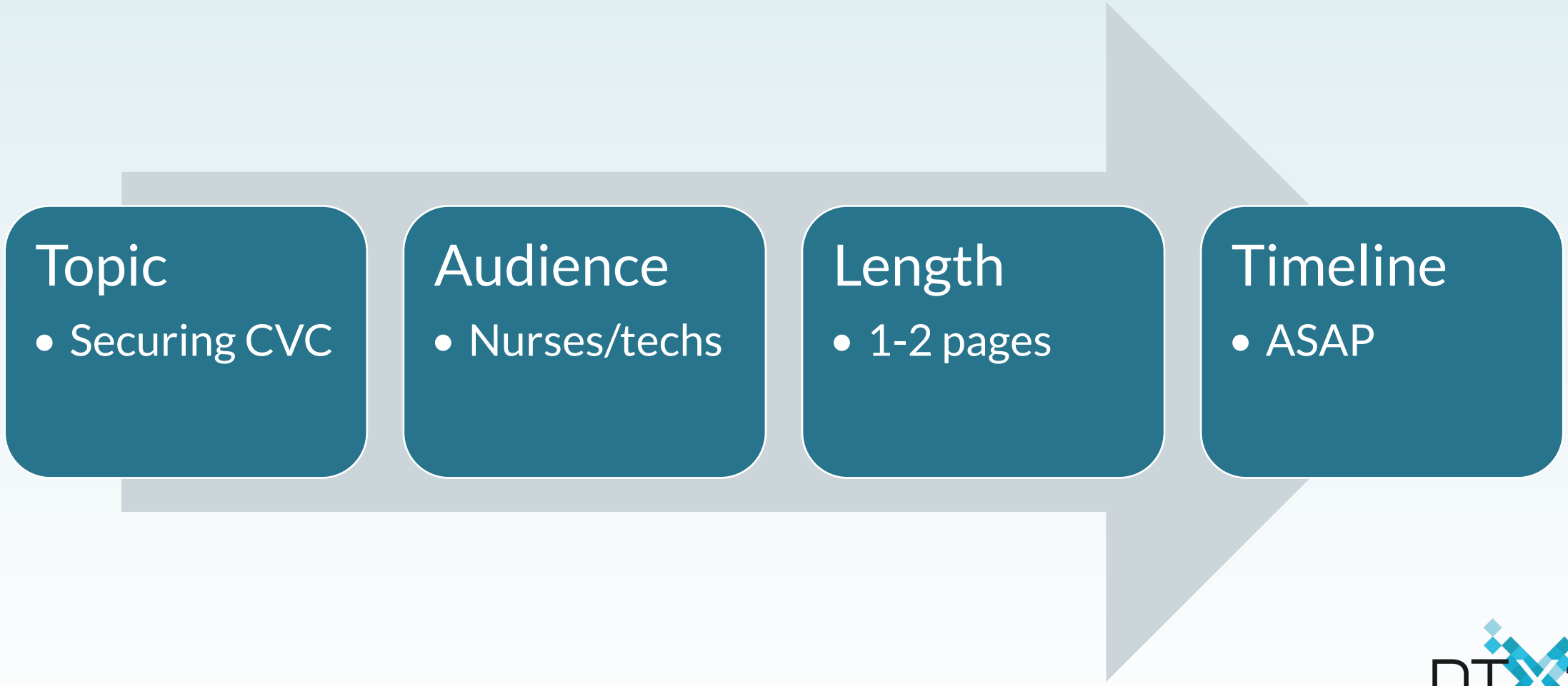
Job Aids/ Training Materials

Writing Job Aids and Training Materials- Example



CVC Job Aid Example

- Review current P&P
- External materials/resources
- Required content
  - Supplies
  - Steps to secure CVC
  - Pictures or diagrams
- Develop draft
- Reviewer (for feedback)
  - Dialysis technician and/or nurse should be involved
- Revisions made
- Final review completed

Job Aid example

Reference P&P # or title

Verifying all connections are secure and visible are important aspects of patient culture of safety and may prevent complications such as blood loss and air embolism.

Always Put on Appropriate PPE & Perform Hand Hygiene

Safety & Infection control

PPE:

- ☐ Fluid resistant/fluid impervious barrier garment
- ☐ Face protection
- ☐ Mask
- ☐ Gloves

Key Points on Supplies Needed

Supplies needed:

- ☐ Single use tape
- ☐ Hemostats (blood line clamps)

Supplies

Securing Hemodialysis Lines for Patient with Central Venous Catheter (CVC)

1-04-02

- CVC lumen and blood tubing connections will be verified for accurate, patent and secure connections, and remain visible throughout the treatment.

Pictures/diagrams

Secure connections and initiate dialysis per policy & procedure.
Remember:

- To verify dialysis lines are secured to patient/patient clothing-to prevent catheter, connections, or dialysis lines to be pulled when patient moves during dialysis care.
  - Hemostats- attached to patient clothing, keeping clean barrier in place (chux)
  - Tape- attaching to patient clothing, keeping clean barrier in place (chux)
- To document lines are visible and secure.
- Do Not secure patient lines to immovable object. For example to the chair, bed, or side rail. Those objects do not move with the patient.
- If the patient's position is changed or an intervention is performed during treatment, verify the treatment lines are loose enough to accommodate movement, and the connections are secure and visible after intervention is complete.

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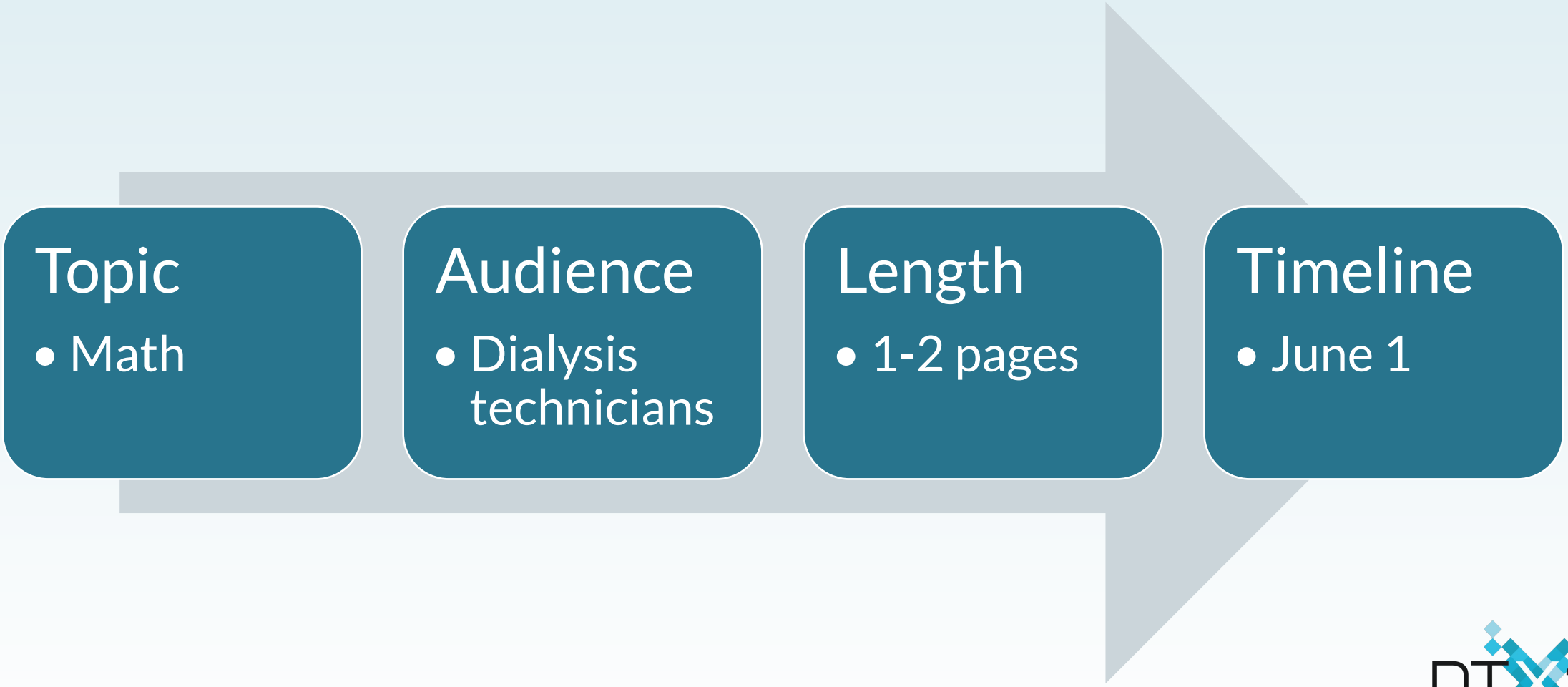
Training Material Example



Training Material Example

- Review current P&P
- External Resources
- Required parts- ***create an outline***
  - Introduction
  - Reason
  - Units of measure
  - Math- practical application
  - Reinforce/quiz
- Develop draft
- Reviewer (for feedback)
  - Dialysis technician and/or nurse should be involved
- Revisions made
- Final review completed

Example Training Material

Reason

Dialysis Math

A Lesson for Clinical Teammates

In dialysis the metric system is used for the calculation and measurement of nearly everything. This lesson provides a quick overview of the most common units of measurement, abbreviations, and a demonstration of calculations in dialysis practice.

Introduction

Math is all around the dialysis setting. As a dialysis teammate you should to know how to:

- ☐ Calculate patient weight (conversion kg to lb and lb to kg)
- ☐ Calculate patient oral intake
- ☐ Calculate patient weight gain/loss
- ☐ Calculate fluid removal
- ☐ Calculate patient goal
- ☐ Calculate fluid replacement
- ☐ Calculate UFR
- ☐ Calculate Heparin for infusion (using 1,000 U/mL)
- ☐ Prepare bleach water solution

Commonly Used to Conversions		Commonly Seen abbreviations	
1 oz	30 mL	kg	kilogram
1 L	1000 mL	g	gram
1 g	1000 mg	mg	milligram
1 mg	1000 mcg	mcg	microgram
1 kg	2.2 lb	mL	milliliter
1 lb	0.45 kg	cc (used interchangeably with mL)	Cubic centimeter

Tools- unit of measure

Mixing bleach solution – working with percentages/ratios/fractions		Measurements of Concentration
1:10	10% 1 part bleach to 9 parts water 1000mL= 100 mL bleach and 900mL water 500mL= 50mL bleach and 450 mL water	▪ mg/L: milligrams per liter measures the amount of solute in a liter of solution. One mg per liter is equal to one part per million. ▪ PPM: parts per million. One gram contains 1,000mg, and one liter contains 1,000mL of water. Since 1,000 x 1,000 = 1 million, ppm is the same as mg/L. ▪ mg/dl: milligrams per deciliter. A deciliter is 1/10 of a liter. This measure is used for blood test results. For example, normal fasting blood glucose is 70-105 mg/dL. ▪ mEq/L: milliEquivalents per liter
1:100	1% 1 part bleach to 999 parts water 1000 mL= 10mL bleach + 990 mL water 500 mL= 5 mL bleach + 494 mL water	

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Calculations in Practice- Fluid Removal Calculation:

- Quick reminder: 1kg= 1000 mL or 1L ; 1 kg = 2.2 lb;

Treatment time= 3 hours	
Determine the patient's intradialytic fluid removal by subtracting the estimated target weight from the pre-dialysis weight. Convert to fluid equivalents.	
Pre-dialysis weight	46 kg
Estimated target weight	- 43 kg
Fluid Gain	**3 kg** x 1000mL/kg = 3000mL
Next step: Take fluid gain & add the total amount of fluids to be received during tx: *saline prime, rinse back, oral fluids, and IV meds (antibiotics)*	
Fluid gain	3000 mL
Saline prime	200 mL
Rinse back	200 mL
Oral fluids	250 mL
IV meds (IV antibiotic)	150 mL
Total Fluids to be Removed	**3800 mL**

Calculations in Practice- Fluid Replacement Calculation:

Treatment time= 3 hours	
Step 1: Determine the patient's fluid deficit by subtracting the pre-dialysis weight from the estimated target. Convert to Fluid equivalents.	
Pre-dialysis weight	48 kg
Estimated target weight	- 50 kg
Fluid Gain (is a negative amount)	- **2 kg** x 1000mL/kg = 2000mL
Step 2: Add the total amount of fluids to be received during treatment: *saline prime, rinse back, oral fluids, and IV meds (antibiotics)*	
Saline prime	200 mL
Rinse back	200 mL
Oral fluids	250 mL
Total Treatment Fluids	**+ 650 mL**
Step 3: Take the negative amount of fluid gain and add the amount of planned treatment fluids.	
Total Fluids to be replaced	- 2000 mL
Total Treatment Fluids	+ 650 mL
Remaining deficit of fluid (what needs replaced- it will still be a negative number)	- **1350 mL**
Step 4: Now we have the additional amount to be replaced. In dialysis we replace this amount over the number of hours on treatment. The treatment time is listed above as 3 hours. This is delivered by periodic fluid boluses or an infusion pump.	
Total Fluids to be replaced	1350 mL
Total Treatment time	÷ 3 hrs
Fluid Replacement per hour	450 mL/hr

Calculations in Practice-Blood Flow through the Kidney

At first glance, calculating the amount of blood that flows through the kidney may seem impossible. It helps to know where to start. Thinking through the problem we break it down as follows:

1. The human heart beats, on average, 70 times a minute. Each beat (or contraction) of the heart ejects, on average, 70 mL of blood. Thus, **every minute, 4,900 mL of blood is circulated by the cardiac pump, which makes the cardiac output ~5 liters/minute.**
2. Physiological studies show that the two human kidneys receive (as renal blood flow) between 20% and 25% of cardiac output. Reports vary a little, but are always within that range. Even if we use the lower estimate, i.e. 20%, **the two kidneys receive (and filter) a total of ~1 liter of blood/minute**.
3. Therefore, 1 liter x 60 minutes each hour x 24 hours each day x 7 days each week means **the kidneys filter just over 10,000 liters of blood/week**. Not a bad workload—and don't even try to think how many liters that equals in a normal human lifetime!

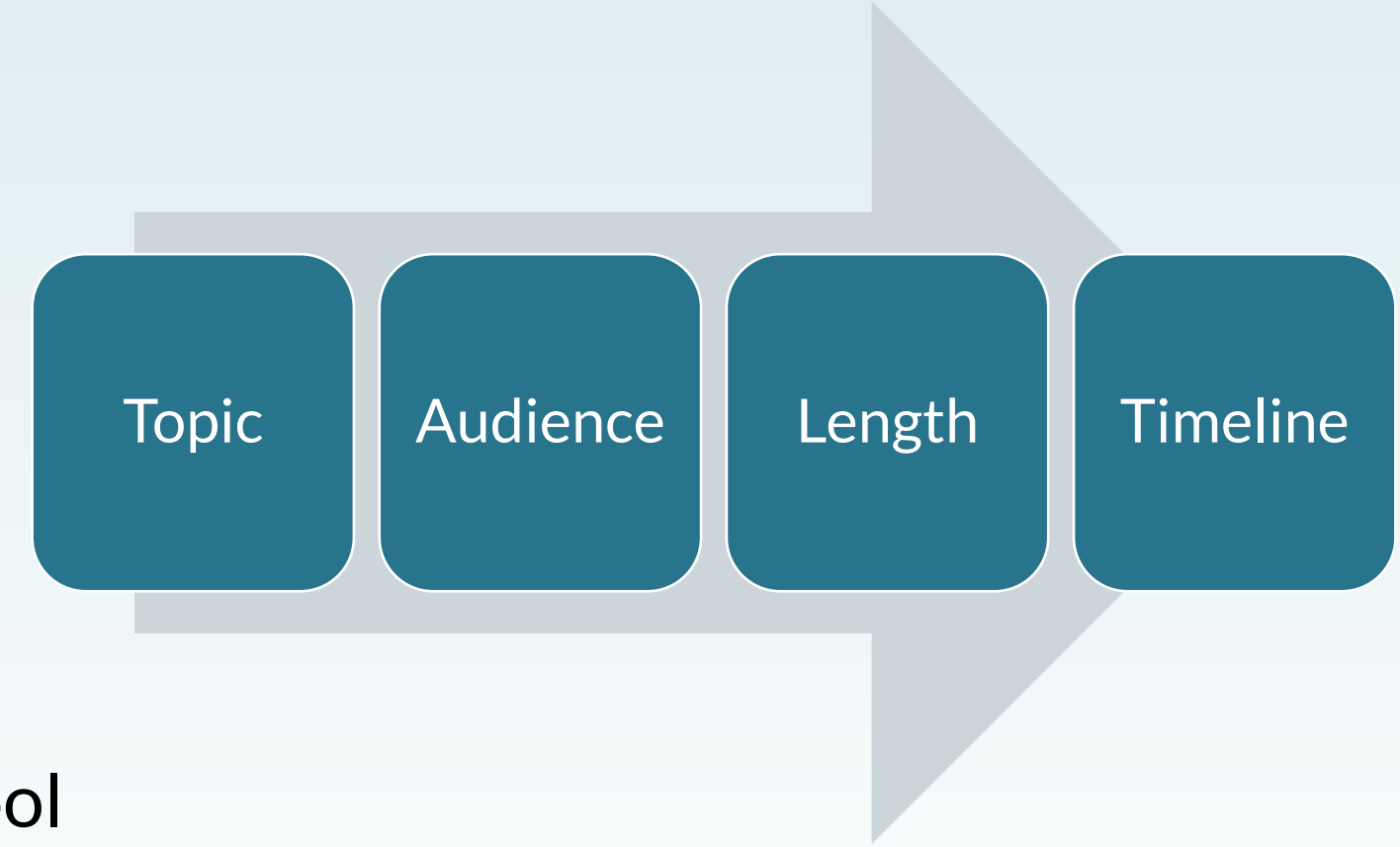
Review Quiz

1. Kilogram is abbreviated as:
   a. kg
   b. kcal
   c. mc
   d. k
2. 'L' is the abbreviation for:
   a. Little
   b. Pound
   c. Liter
   d. Last
3. Milliliter is abbreviated as:
   a. mg
   b. min
   c. mL
   d. mmol
4. One pounds equals approximately _____kilograms.
   a. 0.45
   b. 2.2
   c. 1
   d. 2
5. One kilogram equals approximately _____ pound.
   a. 0.45
   b. 2.2
   c. 1
   d. 2
6. One ounce equals approximately _____ milliliters.
   a. 1
   b. 10
   c. 20
   d. 30
7. How many milliliters are in 8 ounces?
   a. 120
   b. 210
   c. 240
   d. 300
8. How many kilograms is a patient weighing 100 pounds?
   a. 45
   b. 50
   c. 60
   d. 65
9. How many pounds is a patient weighing 100 kilograms?
   a. 100
   b. 120
   c. 200
   d. 220
10. The patient arrives at the unit and is 2.5 kilograms over their target weight. How many liters should you anticipate removing during the treatment (not including prime or rinseback)?
    a. 2 liters
    b. 3 liters
    c. 2.5 liters
    d. 1 liter

1.a 2.c 3.c 4.a 5.b 6.d 7.c 8.a 9.d 10.c

Skills Checklist

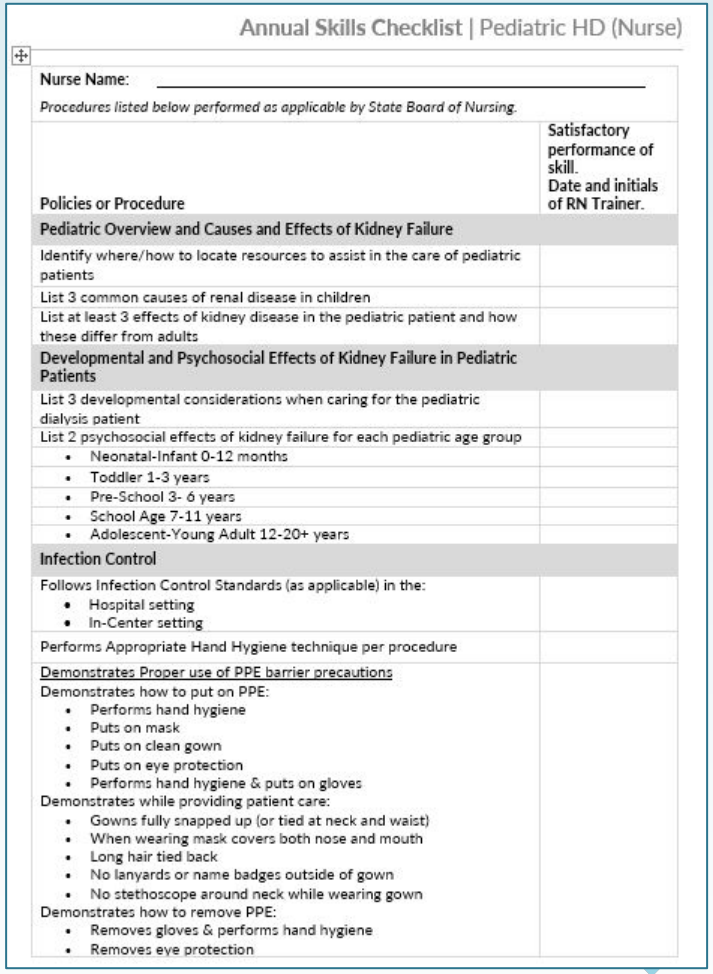
Skills Checklist



- This is a Tool
- Conjunction with other education

Writing a Skills Checklist

- Gather resources
  - Vendor materials
  - Policy/procedure
  - Subject matter expert (SME)
  - Company templet /example



Annual Skills Checklist | Pediatric HD (Nurse)

Nurse Name: _____

Procedures listed below performed as applicable by State Board of Nursing.

Policies or Procedure	Satisfactory performance of skill. Date and initials of RN Trainer.
Pediatric Overview and Causes and Effects of Kidney Failure	
Identify where/how to locate resources to assist in the care of pediatric patients	
List 3 common causes of renal disease in children	
List at least 3 effects of kidney disease in the pediatric patient and how these differ from adults	
Developmental and Psychosocial Effects of Kidney Failure in Pediatric Patients	
List 3 developmental considerations when caring for the pediatric dialysis patient	
List 2 psychosocial effects of kidney failure for each pediatric age group • Neonatal-Infant 0-12 months • Toddler 1-3 years • Pre-School 3- 6 years • School Age 7-11 years • Adolescent-Young Adult 12-20+ years	
Infection Control	
Follows Infection Control Standards (as applicable) in the: • Hospital setting • In-Center setting	
Performs Appropriate Hand Hygiene technique per procedure	
Demonstrates Proper use of PPE barrier precautions Demonstrates how to put on PPE: • Performs hand hygiene • Puts on mask • Puts on clean gown • Puts on eye protection • Performs hand hygiene & puts on gloves Demonstrates while providing patient care: • Gowns fully snapped up (or tied at neck and waist) • When wearing mask covers both nose and mouth • Long hair tied back • No lanyards or name badges outside of gown • No stethoscope around neck while wearing gown Demonstrates how to remove PPE: • Removes gloves & performs hand hygiene • Removes eye protection	

Skills Checklist Language

- Short and concise- plain language
  - Not redoing policy and procedure
  - Refers back to policy and procedure
  - Includes an ‘action’

	Satisfactory performance of skill. **Date and initials of Trainer.**
Demonstrates proper use of PPE	
Verbalizes infection control measures for patient with Hepatitis B	
Confirms patient prescription machine settings per P&P	
Initiates treatment according to procedure	
Documents all findings, interventions and patient responses	

Skills checklist- example

Request:

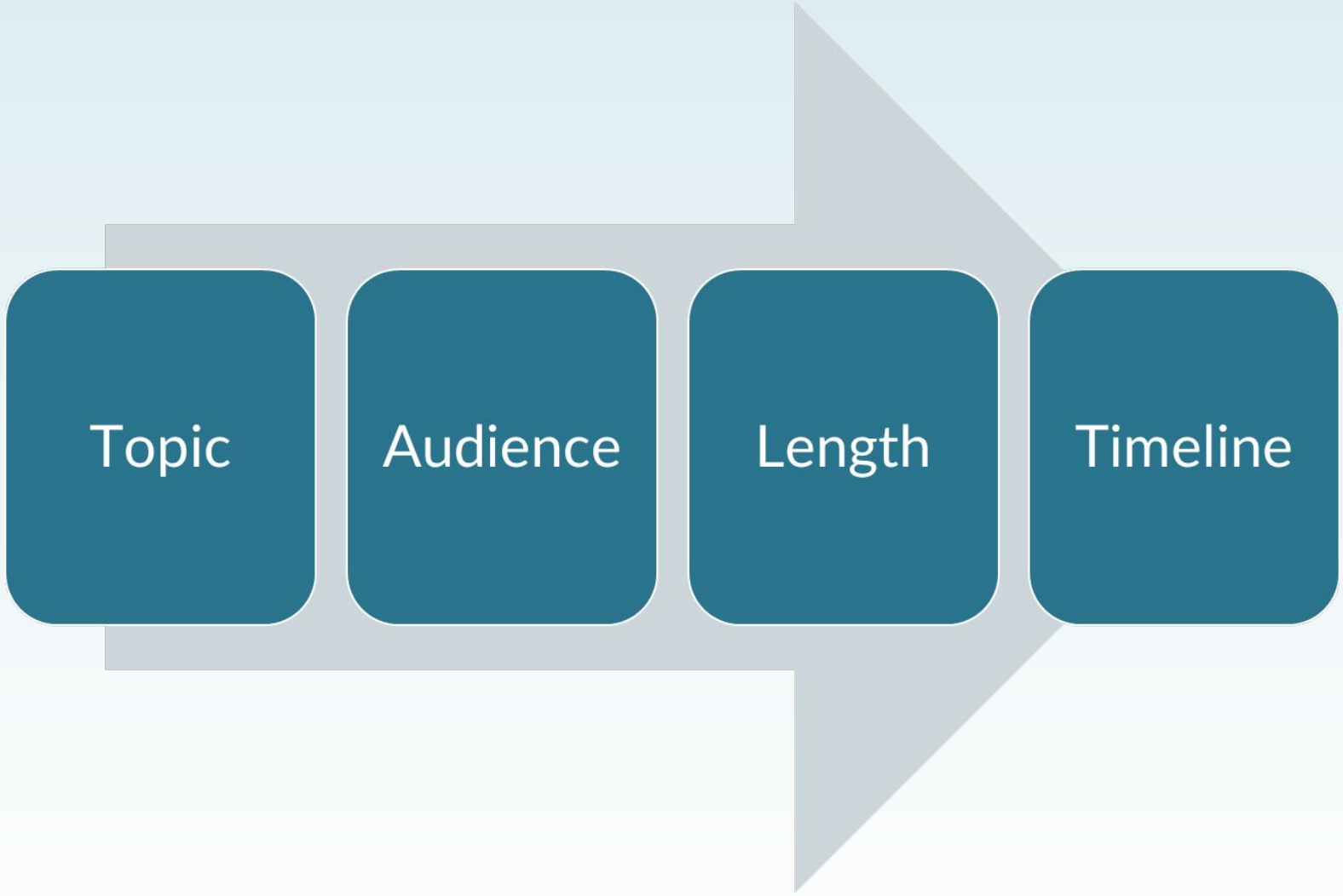
- Chlorine testing- initial/annual training
- Clinical teammates (nurses, dialysis technicians)
- Length TBD (must meet CMS requirements & manufacturer specifications)
- Need by June 1

Gather resources:

- New P&P (from policy and procedure department)
- Manufacturer directions for RO (from biomed department)
- CMS requirements (from survey department)

Total Chlorine Testing	**Satisfactory performance of skill Date & initial of Trainer**
Verbalizes reasons for Total Chlorine testing and the consequences of abnormal results	
Locates the appropriate sample collection valves for Total Chlorine water samples on the facility's water system. Indicate valve numbers below: Primary Total Chlorine sample valve Secondary Total Chlorine sample valve	
Operates the Total Chlorine testing device used in the facility (indicate device):	
Performs & documents Total Chlorine Testing using the primary testing device including: · Wears appropriate PPE · Verifies the RO has been running for at least 15 minutes · Flushes primary carbon tank sample port prior to collecting sample · Compares sample results to color chart or color comparator · Verifies test results are less than or equal to 0.1ppm · Documents results on the Daily Total Chlorine Log	
Verbalizes action for Total Chlorine breakthrough & documents on the *Total Chlorine Break Through Log*	

Name the four things we focus on when we gather information.


Topic
Audience
Length
Timeline

Policies and Procedures

Policy vs Procedure

POLICIES provides guidance and principles and describe the purpose of what will be done. They are the overarching standard for handling activities, systems and problems.

PROCEDURES are far more specific and provide a step-by-step series of actions, processes or measures to be taken to implement or address a particular activity, system or problem.

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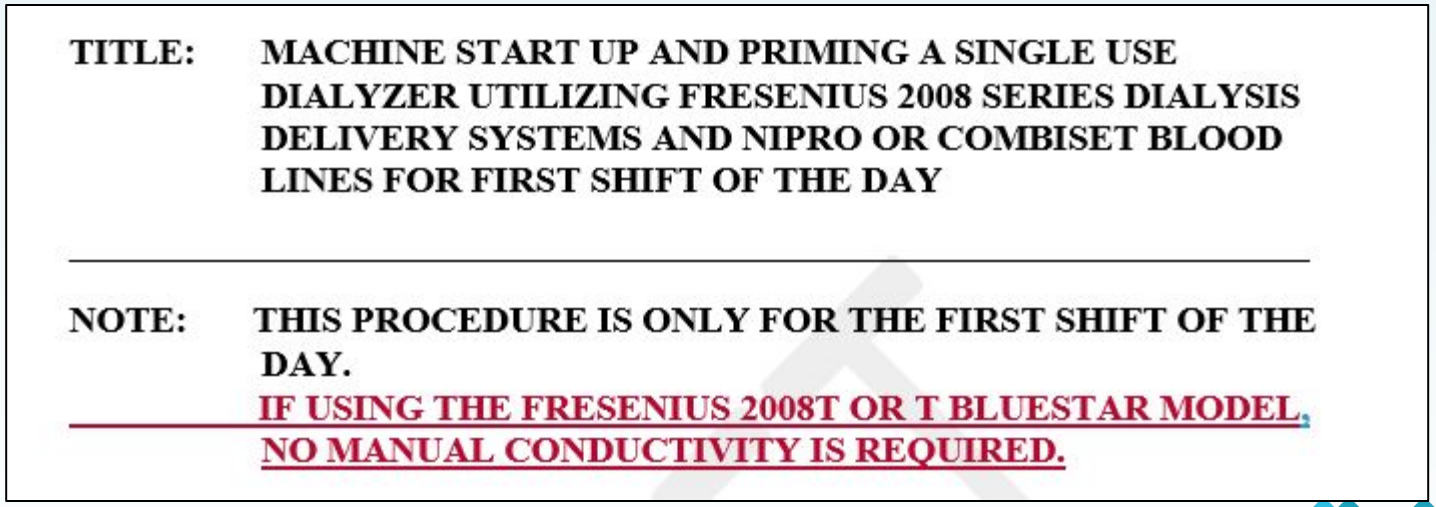
Writing Policies and Procedures

Systematic approach:

- Recognize need
- Review of current literature/manufacturer directions for use
- Create a draft
  - ***Edit, Edit, Edit***
- Review/Test
- Approve

Procedure update- example

- Need: changes in machine conductivity requirements
- Review: Fresenius 2008T/BlueStar manufacturer directions for use
- Draft edits of existing procedure
  - Edits from committee review
- Review/Test
- Approve



TITLE: **MACHINE START UP AND PRIMING A SINGLE USE DIALYZER UTILIZING FRESENIUS 2008 SERIES DIALYSIS DELIVERY SYSTEMS AND NIPRO OR COMBISET BLOOD LINES FOR FIRST SHIFT OF THE DAY**

NOTE: **THIS PROCEDURE IS ONLY FOR THE FIRST SHIFT OF THE DAY.**

IF USING THE FRESENIUS 2008T OR T BLUESTAR MODEL, NO MANUAL CONDUCTIVITY IS REQUIRED.

Procedure update- example

~~41.~~36.	If using Fresenius 2008K or K2 model machines, ~~C~~check independent conductivity with approved independent meter for testing final dialysate. Compare independent reading to the TCD. This independent reading should be no more than ± 0.4 mS from the "TCD". Or If using Fresenius 2008T or T BlueStar model, n~~N~~o manual conductivity is required.	~~41.~~36.	NOTE: Acceptable range for final dialysate conductivity is 13 - 15.5 mS. If the physician orders dialysate sodium of 136 or less in specific circumstances, then the acceptable range for final dialysate conductivity is 12.8 – 15.5 mS. Fresenius 2008T or T BlueStar machine performs independent conductivity at the end of pressure holding and alarms test. A pass or fail will show on the screen. The pre-treatment conductivity reading will be displayed in the dialysate screen. If the final dialysate conductivity is not within this range, do not initiate treatment and investigate the reason the values are outside the acceptable range.

~~43.~~38.	If the **alarm limits** are found to be greater than +/- 0.5mS/cm of the TCD, do not initiate treatment and licensed nurse will contact Biomed for further instruction.	~~43.~~38.	
~~44.~~39.	Check independent pH with approved test method for final dialysate. Acceptable range for final dialysate pH is 6.9-7.6.	~~44.~~39.	
~~45.~~40.	D~~D~~ocument these numeric values in the patient's electronic treatment record or flowsheet. If using Fresenius 2008T or T BlueStar machines enter "NA" or "N/A" in the manual conductivity field.	~~45.~~40.	Manufacturer does not require independent conductivity test when using 2008T or T BlueStar machines.

Plan of Correction

When the Statement of Deficiencies (SOD) arrives:

- ✔ Review SOD
- ✔ Write the 1st POC draft on a WORD document
- ✔ Include for every tag that applies:
  - who will conduct in-servicing/education
  - dates of in-service for team, documentation as evidence of in-service
  - dates of education for patients, documentation as evidence of education in MR
  - use policy titles…not just policy number
  - dates or estimated dates/timelines for completion (include repairs/physical plant issues)
  - who, what, %, and frequency of auditing to monitor for compliance

Completing the Plan of Correction

Finishing steps:

- ✔ Send 1st draft to survey director, administrator, educators
- ✔ Set up and participate in conference calls to finalize the POC, as needed
- ✔ Send final POC to survey director for review/polishing/approval/formatting
- ✔ Submit final POC to CMS or State per instructions on cover letters

Example Plan of Correction

"The Biomedical technician in-serviced the dialysis team on 10/15/21 Policy #23 Machine Conductivity Testing and Policy #24 Machine pH Testing. Conductivity meters and pH testing strips used at the unit were reviewed and the team verbalized understanding and returned demonstration of completing conductivity testing and pH testing strips. Inservice is evidenced by Inservice signature sheet. The biomed technician will conduct documented observational audits on random shifts daily x1 week, then 3x/week x2 weeks, then monthly using the audit tool. Results of audits will be reviewed with the Administrator and Medical Director during the monthly meeting. The Administrator is responsible for compliance. Completion date XX/XX/XX."

Plan of Care

Plan of Care

The Plan of Care must:

- Be individualized
- Specify the services necessary to address the patient's needs, as identified in the assessment
- Include measurable and expected outcomes
- Include estimated timetables to achieve outcomes
- Contain outcomes consistent with current, evidence-based, professionally-accepted, clinical practice standards

Writing for a Plan of Care

- Information comes from assessment/data collection
  - Generates list of problems
  - Team creates/adjust for individual

- Participation/Involvement varies
  - Your writing (documentation) is important
  - Understand the interdisciplinary team approach
  - Get involved in planning process

Plan of Care Example- New Patient

Topic- Education:

- New patient needs education related to dialysis care

Planned Interventions:

- RN to review Modality Choice materials by XXX
- Dialysis Technician to reinforce Modality Choice materials by XXX

Documentation entries:

- *Reviewed Modality Choice materials with patient. They voiced interest in peritoneal dialysis option. Notified charge nurse of patient interest and wanting to learn more about PD.*

Next Steps

Make a Plan

- Interested – tell your Leadership!
  - Roadmap/Career Ladder
  - Connections
- Interested- invest in yourself!
  - Training
  - Classes
- Interested- practice, practice, practice!

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Tools and Resources

Basic Writing Tools/Resources:

- Purdue Online Writing Lab https://owl.purdue.edu/owl/general_writing/the_writing_process/writing_task_resource_list.html

- Grammarly https://www.grammarly.com/

Presentation Resources:

https://www.skillsyouneed.com/present/writing-your-presentation.html

https://writingcenter.gmu.edu/guides/writing-a-powerpoint-presentation

https://owl.purdue.edu/owl/general_writing/visual_rhetoric/designing_effective_powerpoint_presentations/index.html

Technical Writing:
https://contentwriters.com/blog/what-is-technical-writing/

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Conclusion

Recap

- Defined technical writing
- Dispelled some writing myths
- Reviewed steps to begin writing
- Explored examples for:
  - Presentation
  - Skills checklists
  - Job Aids/Training materials
  - Policies and procedures
  - Plan of correction
  - Plan of care
- Identified resources

References and other Resources

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