Strategies For Measuring Protocol Outcomes

Once Respiratory Care Protocols have been implemented, it is essential to justify using the protocols just as it is essential to justify any Respiratory Care Service. Outcome and process measures must be put in place to determine the ability of the protocols to deliver appropriate respiratory therapy in a cost-effective manner. The ability to objectively measure the impact of a protocol program is critical to insuring its success. The following outcome measures table was constructed to provide some suggestions for methods that can be utilized to validate the effectiveness of a protocol program. Outcome data or process measures can be a series of measures or a combination of key elements that aid in evaluating the appropriateness and cost effectiveness of the program. Generally, baseline data should be collected both prior to and following implementation of a new program so that there is a basis for comparison. The selection of outcome measures should be institution specific; in other words, which measurements will have the most impact within your institution? Give some attention to the "sensitivity" of the data collection measure used, e.g., is the data best collected in patient days, or hours. The data collection measures listed in the table below is a collection of methods that have been utilized and reported by those with protocol programs in place. The methods you select will depend largely on the technology and mechanism available to you for data collection. Again, consider what you believe to be most valued by those that will be critiquing your program.

OUTCOME MEASURES		
CATEGORY& MEASURE	**PURPOSE**	**DATA COLLECTION TOOLS**
COSTS		
Direct cost per patient	Determine if direct costs increase or decrease before and after protocol implementation	Financial software or manual determination
Number of different respiratory procedures	Determine increase or decrease after protocol implementation	Hospital Information System
Number of respiratory procedures per patient	Procedures increase or decrease after protocol implementation	Manual collection or Respiratory Therapy Information System software
Length of time (days) on different respiratory therapies	Number of days on therapy increase or decrease after protocol implementation	Manual collection or Respiratory Therapy Information System software
Volume of missed treatments	Review volume of missed treatments before and after protocol implementation.	Hospital Information System, Respiratory Therapy Information System ,or Manual System
ORDERS (Appropriateness & duration)		
Number of appropriate respiratory care orders	Determine amount of appropriate respiratory care orders using AARC Clinical Practice Guidelines	Software or Manual Audits
Number of inappropriate (discordant) respiratory care orders	Determine amount of inappropriate respiratory care orders using AARC Clinical Practice Guidelines	Software or Manual Audits
Number of appropriate indications with no therapy ordered	Determine amount of therapy that was indicated but not provided	Software or Manual Audits
Number of times orders were revised per protocol 'vs.' per physician without protocols	Compare order changes in response to patient clinical status changes for protocols 'vs' physician orders	Respiratory Therapy Information System or Manual System
Number of times order frequency changed per protocol, vs. per physician order	Compare order frequency changes in response to patient clinical status changes for protocols 'vs' physician order	Respiratory Therapy Information System or Manual System

Number and types of physicians ordering protocols	Provides information on consumers and non-consumers of protocol service	Hospital Information System, Respiratory Therapy Information System or Manual System
OUTCOME MEASURES (cont'd.)		
CATEGORY& MEASURE	**PURPOSE**	**DATA COLLECTION TOOLS**
CLINICAL OUTCOMES		
Average length of stay (ALOS) by DRG	Hospital stay increases or decreases after protocol implementation	Hospital Information System
Hospital readmission rates (within 2 weeks) by DRG	Impact of protocols on readmission rates	Hospital Information System
Oxygenrequirement changes during course of therapy with and without protocols	Assess the effect of protocols on patients' oxygenation	Respiratory Therapy Information System, Electronic Medical Record, or Manual System
Peak flow measurements before and after bronchodilator therapy	Determine the effectiveness of protocol driven therapy	Respiratory Therapy Information System, Electronic Medical Record, or Manual System
Number of "break-through" treatments for protocol patients on bronchodilators	Assess the effectiveness of the bronchodilator protocol	Respiratory Therapy Information System, Electronic Medical Record, or Manual System
Adverse responses: e.g. ICU admissions, deteriorating respiratory status, ...	Determine the effectiveness of protocol driven therapy	Respiratory Therapy Information System, Electronic Medical Record, or Manual System
WEANING PROTOCOLS		
Duration of time before weaning begins (in hours)	Assess protocol's ability to determine weaning readiness	Audit ventilator flow sheets (electronic or paper)
Duration of weaning time (in hours)	Determine if protocol weaning shortens weaning time	Audit ventilator flow sheets (electronic or paper)
Total duration of time on the ventilator (in hours)	Determine if protocol weaning shortens total time on the ventilator.	Audit ventilator flow sheets (electronic or paper)
Duration of ICU stay	Determine the impact of protocol weaning on time in the ICU	Audit ventilator flow sheets (electronic or paper)
Number of re-intubations (during current hospital stay) following protocol weaning	Determine effectiveness of protocol weaning	Audit ventilator flow sheets (electronic or paper), and patients' medical record
EFFECT ON RT STAFF		

Staff utilization / workload demands	Determine impact of protocols on staffing and workloads	Respiratory Therapy Information System or Manual System
OUTCOME MEASURES (cont'd.)		
CATEGORY& MEASURE	**PURPOSE**	**DATA COLLECTION TOOLS**
EFFECT ON RT STAFF (cont'd)		
Productivity measures before and after protocol implementation	Determine effect of protocols on therapists' productivity	Hospital productivity measurement formula
Therapist satisfaction	Impact of protocols on staff. Survey before and after protocol implementation.	Therapist satisfaction survey instrument
MISCELLANEOUS (Points of interest)		
Percent of protocol patients vs. percent of physician-directed patients	To track the progress of protocol implementation	Respiratory Therapy Information System, Electronic Medical Record, or Manual System
Number of patients on protocols by DRG	To track relationship of protocols to respiratory related DRGs	Hospital Information System
Case-mix index for severity score	To determine if the protocol patients and the physician-directed care patients have similar a severity of illness	Hospital Information System and CMS data
Assessment scoring system for severity of respiratory illness	To determine if the protocol patients and the physician-directed care patients have similar a severity of illness	Respiratory Therapy Information System, Electronic Medical Record, or Manual System
Patient satisfaction scores	To determine patient satisfaction with protocol-directed care as compared with physician-directed care.	Patient satisfaction survey instrument

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