Unique Study Tools for Quality Improvement (QI) Research in Home Parenteral Nutrition (HPN)

Rebecca Brown, RDN, CNSC[1]; Michael Rothkopf, MD, FACP, FACN, FTOS[2]

Institution: Amerita, Inc., Denver, Colorado, USA

BACKGROUND

Our home infusion organization successfully completed a 3-phase, 29-month analysis of home parenteral nutrition (HPN) care. The study was powered to obtain results on quality of care and outcomes in long term patients on HPN. Quality of life (QOL), multimorbidity (MM) and qualitative assessment of benefit (QAB) were important measurements in our study. We utilized 3 unique study tools to obtain these parameters.

- We used the EQ-5D-3L for QOL assessment (figure 1). The EQ-5D-3L system has five dimensions: mobility, self-care, usual activities, pain or discomfort and anxiety or depression. Each dimension has three levels: no problems, some problems, extreme problems. A sixth dimension records the patient's overall self-rated health as a visual analogue scale.
- We used the Cumulative Illness Rating Scale (CIRS) for MM (figure 2). CIRS analyzes MM by reviewing 14 body system categories, graded from 0 to 4.
- We used the Grounded Theory (GT) Qualitative research methodology (QRM) to measure QAB. QRM utilizes multidimensional aspects of HPN care formed the framework of the GT-QAB.

PURPOSE

We needed a shortened QOL index that offered a single numerical result (2). We wanted to quantify MM so that patients could be compared based on disease burden. We sought to answer the "big picture" question of whether a patient benefited from therapy. In this report, we describe these study tools and offer their consideration for future QI HPN research.

METHODS

- The QIP-PN study reviewed cases for demographics, PN parameters, outcomes, QOL, MM and QAB. Comparisons were made between observation and intervention periods, during which a multidisciplinary nutritional support team (MNST) made HPN management recommendations to the treating physician.
- The EQ-5D-3L Visual Analogue Scale (VAS) recorded the patient's self-rated health state (3). CIRS scores of MM were calculated based on the sum of morbidity for all 14 systems.
- A hypothesis on the benefit of MNST intervention was formulated for each patient and voted on by the MNST. Each professional discipline provided one vote, supporting or denying the hypothesis. If the majority voted affirmatively, a score of 1 was recorded and if majority voted against, a score of 0 was recorded.

Figure 1 - UK (English) EQ-5D-3L Paper Self-Complete (sample version)

Under EACH heading, please ✓ the ONE box that best describes your health TODAY.

MOBILITY	✓
I have no problems in walking about	
I have some problems in walking about	
I am confined to bed	
SELF-CARE	✓
I have no problems with self-care	
I have some problems washing or dressing myself	
I am unable to wash or dress myself	
USUAL ACTIVITIES (e.g. work, study, housework, family or leisure activities)	✓
I have no problems with performing my usual activities	
I have some problems with performing my usual activities	
I am unable to perform my usual activities	
PAIN / DISCOMFORT	✓
I have no pain or discomfort	
I have moderate pain or discomfort	
I have extreme pain or discomfort	
ANXIETY / DEPRESSION	✓
I am not anxious or depressed	
I am moderately anxious or depressed	
I am extremely anxious or depressed	

We would like to know how good or bad your health is TODAY.

- This scale is numbered from 0 to 100.
- 100 means the **best** health you can imagine. 0 means the **worst** health you can imagine.
- Mark an X on the scale to indicate how your health is TODAY.
- Now, please write the number you marked on the scale in the box below.

YOUR HEALTH TODAY = ☐

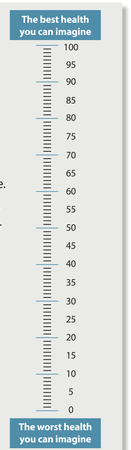

Figure 2 - Cumulative Illness Rating Scale (CIRS)

CARDIO-VASCULAR-RESPIRATORY SYSTEM

1. Cardiac diseases (incl. hypertension)
2. Vascular diseases
3. Hematopoietic
4. Respiratory diseases
5. Eye, ear, nose, throat and larynx diseases (incl. glasses)

GASTROINTESTINAL SYSTEM

6. Diseases of the upper gastrointestinal
7. Diseases of the lower gastrointestinal
8. Hepatic diseases

GENITOURINARY SYSTEM

9. Renal diseases
10. Other genitourinary diseases

MUSCULO-SKELETAL-INTEGUMENTARY SYSTEM

11. Muscle, bone and skin diseases (incl. osteoarthritis)

NEUROPSYCHIATRIC SYSTEM

12. Neurological diseases (incl. stroke, headache and epileptic insults)
13. Psychiatric diseases (incl. psychological counseling and sleeping disorders)

GENERAL SYSTEM

14. Endocrine and metabolic diseases (incl. osteoporosis and Diabetes Mellitus)

ALL SYSTEMS ARE WEIGHTED FROM 0-4.

0	None	
1	Mild	Does not interfere with normal activity; prognosis is excellent
2	Moderate	Interferes with normal activity; treatment is needed; prognosis is good
3	Severe	is disabling, treatment is urgently needed, prognosis is guarded
4	Extremely severe	Life-threatening; treatment is urgent or of no avail; prognosis is grave

RESULTS

There were 30 completed study patients and 30 case-matched controls. The use of EQ-5D-3L-VAS, CIRS and GT-QAB was accomplished with minimal training of the MNST members.

DISCUSSION

- Each of the 3 unique study tools provided beneficial insight for QI HPN research. The EQ-5D-3L-VAS proved to be favorable to the HPN patient for its short assessment form. The EQ-5D-3L requires responses in only 5 categories versus 20 with other QOL instruments. Our research utilized the VAS score as a surrogate for QOL for comparison between phases of the study.
- CIRS scoring enabled us to categorize patients based on their individual conditions and MM in addition to their HPN care. HPN patients often have concomitant medical conditions that impact their care. MM scoring provides a way for outcomes comparison. Standard monitored HPN parameters can miss the overall impact of HPN therapy.
- GT-QAB permitted us to obtain quantifiable information on the judgement of experienced clinicians regarding patient benefit.

CONCLUSION

Measurement of QOL, MM and QAB have value in homecare therapeutics. Tools such as EQ-5D-3L VAS, CIRS score and GT-QAB score should be considered for future HPN QI research.

Disclosures:
Rebecca Brown is an employee of Amerita, Inc.
Michael Rothkopf is a contracted consultant of Amerita, Inc.

[1]Amerita, Inc, Denver, Colorado, USA
[2]Department of Internal Medicine, Rutgers New Jersey Medical School, Newark, New Jersey, USA