Pt-Global app: from paper-based to digital screening, assessment and monitoring of malnutrition

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https://www.youtube.com/watch?v=N7bXOQod5nc
Patient-Generated Subjective Global Assessment

- Assessment of nutritional status
- Assessment of risk factors for malnutrition

- Disease & Nutritional requirements
- Metabolic stress
- Physical exam

- Weight
- Food Intake
- Symptoms
- Activities & Functioning

**PG-SGA**

- **Numerical PG-SGA score**
  - point score from all Boxes and Work sheets
  - Triaging for intervention

- **PG-SGA Category:** Box 1-4 + Work sheet 4 (physical exam)
  - PG-SGA-A = Well nourished
  - PG-SGA-B = Moderately malnourished / suspected malnutrition
  - PG-SGA-C = Severely malnourished

Use of PG-SGA allows to monitor nutritional status across chain of care

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**Application of PG-SGA**

- Developed and validated first within oncology setting:
  - Ottery FD, Nutrition 1996
  - Bauer et al, Eur J Clin Nutr 2002
  - Isenring, Eur J Clin Nutr 2003

- Applied / validated in other populations:
  - Older people (Marshall 2015; Kim 2013; Sheard 2013)
  - Abdominal surgery (Huang 2014)
  - HIV (Mokori et al., 2011)
  - Nephrology (Campbell 2013; Oliviera 2010; Desbrow 2005)

Full Bibliography: [www.pt-global.org](http://www.pt-global.org)
PG-SGA SF: practical and feasible

Mean: 2 min and 36 sec
SD: 1 min and 8 sec
min.: 0.49; max. 5.00

N=19

Positive effects of training in PG-SGA

N=36 untrained health care professionals

Sealy et al., poster ESPEN 2015
To be published
Validity

PG-SGA covers all domains of definition of malnutrition
Content validity of methods to assess malnutrition in cancer patients

PG-SGA (SF) covers all domains of definition of malnutrition

A) Nutrient balance
B) Body shape, body area and body composition
C) Body function

Predicts / related to:
- Hospital readmission (Bauer et al., 2002)
- Chemotherapy toxicity (Vigano et al., 2014)
- Body composition (Vigano et al., 2014)
- Handgrip strength (Vigano et al., 2014)
- QoL (Isenring et al., 2003; Vigano 2014)
**PG-SGA Short Form & full version predict survival**

Vigano et al., JAND 2014

Persson et al., Clin Nutr 1999;18(2):71-77

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**PG-SGA Short Form & full version predict length of stay**

Guerra et al. JAND 2015
**Moderate agreement**

**PG-SGA SF vs. MUST or SNAQ**

<table>
<thead>
<tr>
<th></th>
<th>MUST Low risk</th>
<th>MUST Medium risk</th>
<th>MUST High risk</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG-SGA SF Low risk</td>
<td>60</td>
<td>2</td>
<td>1</td>
<td>53</td>
</tr>
<tr>
<td>PG-SGA SF Medium risk</td>
<td>12</td>
<td>3</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>PG-SGA SF High risk</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>66</td>
<td>7</td>
<td>8</td>
<td>81</td>
</tr>
</tbody>
</table>

Figure 1. Agreement between PG-SGA SF and MUST

<table>
<thead>
<tr>
<th></th>
<th>SNAQ Low risk</th>
<th>SNAQ Medium risk</th>
<th>SNAQ High risk</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG-SGA SF Low risk</td>
<td>48</td>
<td>3</td>
<td>2</td>
<td>53</td>
</tr>
<tr>
<td>PG-SGA SF Medium risk</td>
<td>12</td>
<td>2</td>
<td>5</td>
<td>19</td>
</tr>
<tr>
<td>PG-SGA SF High risk</td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>66</td>
<td>7</td>
<td>8</td>
<td>81</td>
</tr>
</tbody>
</table>

Figure 2. Agreement between PG-SGA SF and SNAQ

\[ \text{N=81} \]

\[
\text{PG-SGA SF vs. MUST: } \kappa=0.452, \text{ ICC}=0.448; \ p<0.001 \\
\text{PG-SGA SF vs. SNAQ: } \kappa=0.395, \text{ ICC}=0.395; \ p<0.001
\]

Angerman et al., poster ESPEN 2015

**PG-SGA SF sensitive to identifying future malnutrition risk**

<table>
<thead>
<tr>
<th></th>
<th>PG-SGA SF (≥ 4 pts)</th>
<th>PG-SGA SF (≥ 9 pts)</th>
<th>MUST (≥ 2 pts)</th>
<th>SNAQ (≥ 3 pts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>1.00</td>
<td>0.78</td>
<td>0.33</td>
<td>0.44</td>
</tr>
<tr>
<td>Specificity</td>
<td>0.90</td>
<td>1.00</td>
<td>0.90</td>
<td>0.90</td>
</tr>
<tr>
<td>Positive predictive value</td>
<td>0.90</td>
<td>1.00</td>
<td>0.75</td>
<td>0.80</td>
</tr>
<tr>
<td>Negative predictive value</td>
<td>1.00</td>
<td>0.83</td>
<td>0.60</td>
<td>0.64</td>
</tr>
</tbody>
</table>

\[ \text{N=19} \]
Innovation in nutritional care
Pt-Global app


Available on the App Store, Google Play, Windows Phone Store.
As compared to my normal intake, I would rate my food intake during the past month as:

Click to select:

- Unchanged
- More than usual
- Less than usual

I am now taking:

Click to select:

- Normal food, but less than normal amount
- Only nutritional supplements
- Little solid food
- Very little of anything
- Only liquids
- Only tube feedings or only nutrition by vein

I had the following problems:

Please check all that apply:

- No problems eating
- No appetite, just did not feel like eating
- Nausea
- Constipation
- Mouth soreness
- Things taste funny or have no taste
- Problems swallowing
- Pain
- Vomiting
- Diarrhea
- Dry mouth
- Smells bother me
- Feel full quickly
- Fatigue
- Other

* Examples: depression, money, or dental problems
Over the past month, I would generally rate my activity as:

Click to select:

- Normal with no limitations
- Not my normal self, but able to be up and about with fairly normal activities
- Not feeling up to most things, but in bed or chair less than half the day
- Able to do little activity and spend most of the day in bed or chair
- Pretty much bedridden, rarely out of bed

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**Fever**

- No fever
  - >37.2 °C and <38.3 °C
  - ≥38.3 °C and <38.8 °C
  - ≥38.8 °C

- Fever duration
  - <72 hours
  - 72 hours
  - >72 hours

**Corticosteroids**

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prednisone (mg)</td>
<td>10</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Cortisone (mg)</td>
<td>50</td>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td>Hydrocortisone (mg)</td>
<td>40</td>
<td>80</td>
<td>120</td>
</tr>
<tr>
<td>Prednisolone (mg)</td>
<td>10</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>Methylprednisolone (mg)</td>
<td>8</td>
<td>16</td>
<td>24</td>
</tr>
<tr>
<td>Dexamethasone (mg)</td>
<td>1.5</td>
<td>3</td>
<td>4.5</td>
</tr>
</tbody>
</table>
Physical exam
Click on each button to complete

Muscle mass and tone
To assess muscle status, the following should be evaluated for decrease in muscle mass or muscle tone, with an overall muscle assessment in terms of degree of defect or loss: Temples (temporalis muscle), Clavicles (pectoralis & deltoideus), Shoulders (deltoideus), Interosseus muscles, Scapula (deltoid muscles), Triceps, deltoideus, "High" (quadriceps), calf (gastrocnemius)

<table>
<thead>
<tr>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>No deficit or loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fat stones</td>
<td>Fluid status</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PG-SGA Triage Score

Total point score: 17
BMI: 22.4 kg/m²

- Weight: 4
- Food intake: 1
- Symptoms: 4
- Activities: 1
- Professional: 9

Weight change in six months: -12%
Weight change in one month: -6%

Triage based on PG-SGA point score
Critical need for improved symptom management and/or nutrient intervention options

C Severely malnourished
Multilingual

12 December 2015

Multilingual

Multiple PG-SGA translations

12 December 2015 2016
Visitors 10 June 2014 – 16 Oct 2015

123 countries
Take home messages

- PG-SGA = screening + assessment + monitoring
  - facilitates consistent scoring in chain of care
- PG-SGA is valid and reliable
- PG-SGA covers all domains of definition of malnutrition
- PG-SGA facilitates patient-centric & proactive nutritional care

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