Introduction
Despite increased disease awareness and developments in disease management, diabetes continues to reach epidemic proportions among American Indian/Alaska Natives (AI/AN). Initiating culturally adapted diabetes self-management education (DSME) prior to emergency department (ED) discharge presents a unique opportunity to improve glycemic control and further reduce the risk of diabetes-related complications among AI/AN adults with uncontrolled type 2 diabetes mellitus (T2DM).

Objectives
Determine the effects of a culturally sensitive evidence-based DSME program, initiated in the ED, on improving the severity of disease in AI/AN adults with uncontrolled T2DM.

Aim 1: Decrease serum glycated hemoglobin (A1C) measurements measured at baseline and a 90-day period.

Aim 2: Improve diabetes self-care activities associated with glycemic control using the Diabetes Self-Management Questionnaire (DSMQ) measured at baseline and a 90-day period.

Aim 3: Decrease body mass index (BMI) measured at baseline and a 90-day period.

Methods
Study Design
One-group pretest-posttest design.

Setting
Critical access hospital in the rural Southwestern United States on an AI/AN reservation that involved the ED and outpatient diabetes clinic.

Sample
Convenience sampling recruited 26 participants in the ED over a two-week period. Of the 26 recruited participants, 10 (38.5%) completed the DSME program. Data from the final intervention sample (n=10) was used for analyses. Baseline characteristics of the final study sample are depicted in Table 1.

Sample characteristics: Table 1

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total (n=26)</th>
<th>Final Sample (n=10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>Female</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Age (years)</td>
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<td>53.3 ± 5.6</td>
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<tr>
<td>Race:</td>
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<td></td>
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<tr>
<td>AI/AN</td>
<td>26</td>
<td>10</td>
</tr>
<tr>
<td>Non AI/AN</td>
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<td>0</td>
</tr>
</tbody>
</table>

Study Variables
The dependent variables for study analysis were pre-post intervention measurements of:

- Serum A1C
- Self-care behavior scores using the validated DSMQ tool.

The DSMQ instrument is a validated assessment tool of diabetes self-care behaviors associated with glycemic control. It consists of sixteen 3-point Likert scale questions and has an internal consistency of 0.84 (Cronbach's alpha).

BMI
The hospital DSME program curriculum was derived from the Diabetes Association (ADA), physical activity, preventing complications associated with DM and diabetes self-care.

Conclusions
To treat the growing epidemic of diabetes among AI/AN communities, culturally-adapted DSME is an important component of improving glycemic control and preventing the complications associated with chronic hyperglycemia. This pilot study found that beyond immediate control of hyperglycemia in the ED, discussion of chronic disease management, establishing follow-up with a diabetes education clinician and enrollment into a DSME program prior to discharge significantly improved self-care behaviors associated with glycemic control and serum A1C measurements.

Summary
- Serum A1C measurements among AI/AN adults with uncontrolled T2DM improved after completing a culturally-adapted DSME program.
- Findings showed significant improvement of overall disease self-efficacy and the specific self-care behavior categories of dietary control, physical activity and glucose management.
- BMI measurements approached significance post-DSME exposure.
- Findings are consistent with studies that have shown disease knowledge and self-care behaviors are closely related, and often result in improved glycemic control.
- This study also provides evidence that T2DM can be treated prior to ED discharge among AI/AN adults with uncontrolled T2DM. By assessing disease knowledge base in the ED, the clinician can better understand gaps in knowledge and skills that could result in dangerous metabolic processes or progress into end-organ damage.
- This study went beyond the acute glucose control that normally occurs in the ED by using assessment and interdisciplinary collaboration to address the complicated metabolic chronicity of T2DM prior to ED discharge.