

**REVIEW ARTICLE**

# Supervision in genetic counselor training in North America: A systematic review

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**Abstract**

Genetic counseling has been a profession for over 40 years, and training programs accredited by the Accreditation Council for Genetic Counseling are required to have students supervised in at least 50 patient-facing cases prior to graduation. However, there is no standardized information or training for supervisors of genetic counseling students. As a first step toward creating formal and standardized supervision training, we undertook a systematic review of the genetic counseling student supervision literature. A formal systematic review was conducted including establishing a research question with inclusion and exclusion criteria, establishing search terms, searching databases, reading/screening abstracts, examining full texts for inclusion, assessing for quality, and finally extracting data with a standardized form to provide the basis of the review. In all, 151 papers were screened, of which 19 and two erratum were found to meet inclusion criteria and pass quality measures. Main themes from these papers were as follows: Training Model, Competencies, Investigation of Techniques, Difficulties in Supervision, and Barriers. In total, 19 papers provided evidence for the way that supervision is currently being performed and suggestions for what needs further investigation to direct supervision training. Recommendations for genetic counseling student supervision include the following: provide a review of training models to supervisors; provide a copy of the supervision competencies to supervisors; use competencies with lowest self-efficacy to inform future supervision trainings; and find ways to support genetic counselors in becoming student supervisors.

**KEYWORDS**

genetic counseling supervision, student supervision, supervision, supervision development, training

**1 | INTRODUCTION**

The field of genetic counseling (GC) most commonly cites the definition of clinical supervision originally proposed for psychology by Bernard and Goodyear: "supervision is a means of transmitting the skills, knowledge, and attitudes of a particular profession to the next generation in that profession. It also is an essential means of ensuring that clients receive a certain minimum quality

of care while trainees work with them to gain their skills" (Bernard & Goodyear, 2008). Supervision serves at least two primary purposes: promoting the professional development of student supervisees and ensuring the continued provision of quality client services (McCarthy & LeRoy, 1998). But supervision is also used for socialization of students and as a gatekeeping apparatus (Bordin, 1983; McCarthy & LeRoy, 1998). It is a critical part of training of the next generation of genetic counselors, and it is a required

element of GC graduate programs accredited by the Accreditation Council for Genetic Counseling (ACGC, 2013). Given the high demand for genetic counselors (Hoskovec et al., 2018), there are increasing numbers of GC training programs, and existing programs are working on increasing the sizes of their classes. However, two of the top six reasons program directors state for not being able to expand their training program are related to a lack of proper supervision (Pan, Yashar, Pothast, & Wicklund, 2016).

Partially because of this interest in increasing GC student class sizes, there has been increased attention being paid to supervision. The Genetic Counselor Workforce Working Group (GC WFWG), a joint venture between the ACGC, American Board of Genetic Counselors (ABGC), American Society of Human Genetics (ASHG), Association of Genetic Counseling Program Directors (AGCPD), and the National Society of Genetic Counselors (NSGC), included specific items toward promoting the importance of supervision and the training of supervisors in their 2017 strategic plan (provided by the NSGC Executive Office; available upon request). Outcome 3 of the Strategic Plan was to "Establish training, support and recognition for clinical supervisors." The first action step of this was to "Establish criteria and develop training for clinical supervisors."

This systematic review was an independent project to help inform this action step for the GC WFWG. In order to establish criteria for training, it must be determined what is already known about GC supervision. This is the first step in forming the body of evidence needed to create courses or learning opportunities for standardizing clinical supervision of GC students, a widely cited need (Atzinger et al., 2014b; Callanan, Veach, & LeRoy, 2016; Hendrickson, McCarthy Veach, & LeRoy, 2002; Lindh, Veach, Cikanek, & LeRoy, 2003). The purpose of this study was (a) to identify what is currently known about the state of GC clinical supervision and (b) to identify items that can be used to further supervision training for genetic counselors.

## 2 | METHODS

### 2.1 | Systematic reviews

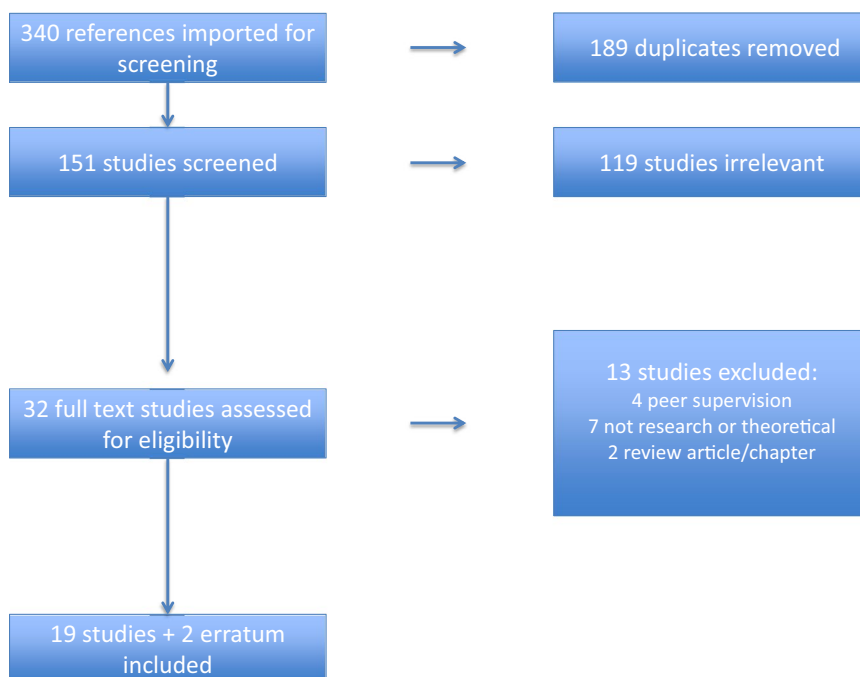
Per the Centre for Reviews and Dissemination, "systematic reviews aim to identify, evaluate and summarise the findings of all relevant individual studies, thereby making the available evidence more accessible to decision makers" (Centre for Reviews and Dissemination, 2009). We used the process developed by this Centre to undertake the systematic review (see Figure 1). The first step is to establish a research question with inclusion and exclusion criteria. Second, specific search terms are established, and databases are searched according to the inclusion/exclusion criteria. The resulting list of articles are then scanned for duplicates, abstracts are read and screened for relevance, and full texts are examined for inclusion. The list of full texts is then assessed for quality, where papers must meet an established minimum threshold. Those that pass are then read in full, with data extracted in a standardized form to provide the basis of the review.

#### 2.1.1 | Research question

The research question for this study was, What is known about GC clinical supervision?

#### 2.1.2 | Search strategy

In conjunction with a Stanford University librarian, search terms were established for extraction of data from PubMed ("genetic counseling"[mh] OR "genetic counsel\*" [tw]) AND ("supervision"[tw]), Scopus (TITLE-ABS-KEY("genetic counsel\*" AND TITLE-ABS-KEY("supervision")), Web of Science (TS=("Genetic



**FIGURE 1** PRISMA flow diagram: The PRISMA diagram details our search and selection process applied during the systematic review

counsel\*" AND "supervision") OR TI=("Genetic counsel\*" AND "supervision"), Embase (('genetic counseling'/exp OR 'genetic counseling' OR 'genetic counsel\*':ab,ti,kw) AND 'supervision':ab,ti,kw), and PsycInfo (MAINSUBJECT.EXPLODE("Genetic Counseling") OR SU(("genetic counseling" OR "genetic counselling" OR "genetic counselor" OR "genetic counselors"))) AND SU("Supervision"). The search occurred in the month of November 2018 and again in July 2019.

### 2.1.3 | Inclusion and exclusion criteria

Papers were eligible for inclusion if they involved clinical supervision in the GC community (genetic counselors, GC students, GC supervisors, and/or GC non-supervisors) and were written in English. While generally systematic reviews are for comparison of randomized controlled trials or other interventional trials, this body of literature does not exist for GC supervision. Therefore, the decision was made to not restrict the types of manuscripts to be included, as long as they were specific to GC supervision of students. We included theoretical papers, Delphi studies, surveys, and creation of outcome measures, both in journals and book chapters.

Papers were excluded if they were review articles/chapters or pertained to non-GC student supervision, including clinical psychology and social work fields or GC peer supervision.

### 2.1.4 | Article reviews

All identified articles were imported into Covidence (covidence.org) and both authors independently reviewed all articles at each step of the process. All discrepancies were discussed until consensus was reached. First, title and abstracts were screened. Irrelevant articles based on the noted inclusion/exclusion criteria were removed, and the remainder were subjected to full-text review. Those that met study criteria were included.

Querying the five databases pulled 340 studies for screening; of these, 189 duplicates were removed, and 151 studies were screened for inclusion. Title and abstract reads excluded 119 studies. The remaining 32 studies were read in full. From these papers, 19 and two erratum (Atzinger et al., 2014a; Vanneste, Chiu, Russell, & Fitzpatrick, 2013b; analyzed as part of the 19 articles, and hereafter will be referred to as 19 articles) matched the criteria for review (see Figure 1). While we were not specifically looking for articles pertaining to North American training, all resulting papers were sampled from participants in the United States and Canada.

### 2.1.5 | Quality assessment

All 19 included papers were subjected to data quality measurement to assess for methodological quality. Based on a scoring system, those that did not meet a threshold for high standard could be excluded from analysis. We scored all papers according to two

published scoring systems (one for quantitative and one for qualitative research; Kmet, Lee, & Cook, 2004). Three of the papers were theoretical in nature without a study population. While we were unable to obtain a quality score, these papers were included in the analysis due to the overarching dearth of GC supervisory literature and the perceived value of the studies by the authors. The tool created by Kmet et al. (2004) includes 14 questions for quantitative research and 10 questions for qualitative research, including questions about study purpose, study design, sample size, analysis methods and specifics, and assigns each a numerical value of Yes (2), Partial (1), No (0), or not applicable. A calculation is provided to determine a total sum, a total possible sum, and a summary score. The summary score is then converted to a percentage and used to determine the degree of quality. We used a fairly conservative cutoff for inclusion of 75%. All papers passed this cutoff level and were included in the review.

### 2.1.6 | Data extraction

Data extraction was performed using a modified version of the NICE data extraction form (National Collaborating Centre for Mental Health, UK, 2007). Extraction data were collected and managed using REDCap, an electronic data capture tool hosted at the Stanford Center for Clinical Informatics. REDCap is a secure, web-based application designed to support data capture for research studies, providing the following: (a) an intuitive interface for validated data entry, (b) audit trails for tracking data manipulation and export procedures, (c) automated export procedures for seamless data downloads to common statistical packages, and (d) procedures for importing data from external sources (Harris et al., 2009). Extraction fields included the following: paper title, first author, year of publication, type of article, type of study (qualitative, quantitative, and theoretical), participants, study aims, key findings, time of study, inclusion criteria, exclusion criteria, sample size, methods, data analysis, limitations, themes, conclusion, generalizability, and implications. All data were extracted by the first author and reviewed by the second author. Any discrepancies in data extracted or main points were discussed until consensus was reached.

## 3 | RESULTS

There were five main themes that emerged from the review of these articles: Training Model (Table 1), Competencies (Table 2), Investigation of Techniques (Table 3), Difficulties in Supervision (Table 4), and Barriers (Table 5). Some papers overlapped into different themes and are listed twice.

### 3.1 | Training models

Three papers discussed training models: *Supervision of Psychosocial Skills in Genetic Counseling* (Borders, Eubanks, & Callanan, 2006), *Training the Millennial Learner through Experiential Evolutionary Scaffolding* (Venne &

**TABLE 1** Theme: models

Reference	Objective	Evaluative summary	Key points	Implications
Wherley et al., 2015	To propose a supervision model to promote comprehensive and consistent clinical supervision training for GC students	Reimagines the Reciprocal Engagement Model (REM) of GC for use is Supervision, creating the REM-S. This model can be used to help supervisors think about supervision as a parallel but separate process to GC and provides specific examples for how to diffuse common supervision issues.	<p>Major tenets:</p> <ul style="list-style-type: none"> <li>• learning and applying genetic information are keys.</li> <li>• student autonomy must be supported; students are capable; student emotions matter</li> <li>• supervisor/supervisee relationship is integral to GC supervision</li> <li>• Supervision outcomes: student can independently provide effective services</li> <li>• develop professionally</li> <li>• engage in self-reflective practice</li> </ul>	Use of the REM-S could standardize supervision processes and maximize clinical supervision outcomes for GC students. Supervisor training could include teaching of the REM-S framework, tenets, and goals.
Borders et al., 2006	To describe approaches supervisors to assist students learning psychosocial skills	Has many concrete, accessible, and translatable suggestions depending on increasing student counseling skills to help students reach the next level.	Uses many of the psychosocial interventions that are used in GC, such as confrontation, role plays and think aloud, but as interventions with students.	By using psychosocial skills to teach psychosocial skills, it is modeling behavior for the students. Supervisor training could include modeling of the psychosocial behaviors that supervisors can use with students.
Venne & Coleman, 2010	To summarize the distinguishing traits of Millennials, authentic learning, and evolutionary scaffolding theories to enhance teaching and supervision	Provides the framework for using authentic learning and scaffolding to provide a method for teaching the different personalities of the Millennial generation.	<p>Supervisors utilize Millennial's interest in real-life experiences to enhance their rotation.</p> <ul style="list-style-type: none"> <li>• Begin with a real case, but without limitations (such as time, diversity, unexpected findings)</li> <li>• When the learner is engaged and competent at the task, move to multiple variables and relationships (limiting time to prepare or adding last minute details)</li> </ul>	GC supervisors can increase critical and independent thinking of students while leveraging the characteristics of the Millennial learner. Supervisors should highlight how the student's work makes a difference to patients. Supervisor training could include definitions for Millennial characteristics; scaffolding; and authentic learning.

Abbreviations: GC, Genetic counseling; REM, Reciprocal Engagement Model; REM-S, Reciprocal Engagement Model – Supervision.

**TABLE 2** Theme: competencies

Reference	Objective	Study design	Population studied	Evaluative summary	Key findings	Implications
Eubanks Higgins et al., 2013	To gain consensus about important GC supervisor knowledge, characteristics, and skills	Modified Delphi study	Purposeful sampling of Program Directors and GC supervisors	This paper was done for the purpose of being used to create objectives for GC supervision training. All included items have a very high rate of consensus among all genetic counselor respondents, indicating that the 158 items included in the competencies are universal across practice settings. They are also specific and measurable, creating opportunities for research into how well people are doing these items.	Six domains: 1. Personal traits and Characteristics (23 items describing general supervisor qualities and behaviors) 2. Relationship Building and Maintenance (29 items related to supervisor qualities and behaviors that promote a working alliance and a safe and positive learning environment) 3. Student Evaluation (38 items related to supervisor skills that reflect awareness of and effective management of the evaluative nature of supervision) 4. Student-Centered Supervision (32 items related to supervisor behaviors that allow them to work effectively with student individual differences, student learning styles, and developmental levels) 5. Guidance and Monitoring of Patient Care (20 items ensuring students learn to provide a standard of patient care) 6. Ethical and Legal Aspects of Supervision (12 items related to supervision behaviors that model ethical and professional treatment of patients and students)	Clinical supervision has a separate set of skills from GC. Supervisor training could highlight: training in supervisor/student challenges; working with novice versus advanced students in clinical rotation placements; student evaluation and supervisor methods; supervisor/student styles; and supervisor relationship development.
Atzinger et al., 2016	To determine the effectiveness of formal GC supervision training on long-term perceived confidence and competence in supervision	Quantitative/ Intervention Scale used: Likert scales and Psychotherapy Supervisor Development Scale (PSDS; Watkins, Schneider, Haynes, & Nieberding, 1995)	GC supervisors involved in a one-day supervision training conference	Even a one-day conference provides measurable and lasting positive effects on genetic counselors' perceptions of their own supervision.	Content of course: Previously identified areas of interest for training were the focus, and the content was tied to the published GC supervision competencies (Eubanks Higgins et al., 2013). Genetic counselors had higher self-efficacy after the conference than before, and still statistically significantly higher 6 months later. This supports the idea that a one-day supervision conference can have a lasting impact on how supervisors perceive their skills.	A conference is likely to be most impactful if it addresses skills with which GC supervisors are not already comfortable. Supervisor training could be informed by the literature and target those items with which GCs struggle.

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TABLE 2 (Continued)

Reference	Objective	Study design	Population studied	Evaluative summary	Key findings	Implications
Finley et al., 2016	To evaluate whether supervisors possess specific competencies and if their competencies differ as a function of experience	Quantitative Scale used: Self-efficacy scale based on (Bandura, 2006), using the (Eubanks Higgins et al., 2013) competencies of Goal Setting and Feedback	GC supervisors	There is a lack of systematic training for supervisors of GC students. GC supervisory skills arguably are distinct from skills involved in GC practice. Evaluated at Eubanks Higgins et al. Competency: Domain III, Student Evaluation: Goal setting and feedback. Supervisors felt they were proficient in Goal Setting. Need more training in feedback.	More supervisees in past for the supervisors was associated with higher self-efficacy. Most difficulty goal setting competencies: Incorporate student's report of feedback received from previous supervisors into rotation goals, re-negotiate rotation goals with a student if needed, and incorporate the student's developmental level into the rotation goals. Most difficult feedback competencies: Provide feedback about student behavior rather than personal traits that the student cannot change, Provide feedback based on student developmental level, and provide student feedback that is honest	Supervisor training could target goal setting and feedback competencies with the lowest self-efficacy ratings.
Caldwell et al., 2018	To determine if a GC student's perception of the supervisory working alliance is related to their self-efficacy on select clinical practice-based competencies	Quantitative Scales used: Supervisory Working Alliance Inventory-Trainee Form (Efstation, Patton, & Kardash, 1990); Genetic Counseling Self-Efficacy Scale (Caldwell et al., 2018)	GC students	The student's perception of the supervisory working alliance between the genetic counselor and GC student is related to a student's self-efficacy to perform certain GC tasks.	The higher the SWAI-T score, the greater the student's self-efficacy. More effective if there is only one supervisor, and not multiple supervisors in one rotation. Remember: self-efficacy is not the same as skill level.	Better genetic counselor to GC student relationships are related to feelings of greater competency among students. Supervisor training could discuss the supervisory working alliance and strategies to strengthen the relationship.

Abbreviations: GC, Genetic counseling; SWAI-T, Supervisory Working Alliance – Trainee.

**TABLE 3** Theme: investigation of techniques

Reference	Objective	Study Design	Population Studied	Evaluative Summary	Key Findings	Implications
Hendrickson et al., 2002	To investigate GC student and supervisor perceptions of the nature and impact of live supervision	Qualitative study with six focus groups	GC students and supervisors (Purposeful sampling)	First paper investigating student and supervisor perceptions of live supervision.	<p>Almost all GC supervision is live supervision. Students need training on being supervised.</p> <p>Supervisors need training on supervision.</p> <p>Supervisors should have an informed consent or contract for the rotation/supervision; conduct an orientation; use a checklist in session to make sure student covered important topics; establish specific goals for each session and for each rotation.</p> <p>There should be a minimum experience level to serve as a supervisor.</p>	<p>Supervisors can use a rotation informed consent or contract to improve the supervisory relationship and to set expectations for students.</p> <p>Supervisor training could discuss live supervision and other options for supervision, as well as introduce options for informed consent of supervision/rotation.</p>
Lindh et al., 2003	To investigate the nature of clinical supervision for GC students	Quantitative Survey: Original, created from book chapter (McCarthy & LeRoy, 1998) and own experience	Genetic counselors	Gathered information from supervisors and non-supervisors about supervision-related logistics; student assessment; feedback; student challenges; and reasons for or against being a supervisor.	<p>Supervisors learned mostly via informal training methods; trial and error, student feedback, consult with colleagues, follow own supervisors' methods.</p> <p>Informal training for supervision is insufficient. Almost all GC supervision is live supervision; very labor-intensive.</p> <p>Training programs should develop recommendations regarding frequency and timing of formal feedback sessions.</p> <p>Training programs and clinical sites should provide remediation information to rotation sites.</p>	<p>GC training programs need to provide appropriate support for GC supervisors. Recent graduates should not be supervisors. The profession should consider setting minimum criteria for clinical supervisors.</p> <p>Supervisor training could discuss examples of how GC programs handle feedback timing and remediation.</p>

(Continues)

TABLE 3 (Continued)

Reference	Objective	Study Design	Population Studied	Evaluative Summary	Key Findings	Implications
Finley et al., 2016	To evaluate whether supervisors possess specific competencies and if their competencies differ as a function of experience	Quantitative Scale used: Self-efficacy scale based on (Bandura, 2006), using the (Eubanks Higgins et al., 2013) competencies of Goal Setting and Feedback	GC supervisors	There is a lack of systematic training for supervisors of GC students. GC supervisory skills are distinct from skills involved in GC practice.	Most prevalent methods of developing supervision skills were consultation with colleagues, feedback from students, trial and error. Highest mean effectiveness ratings were consultation with colleagues, peer supervision group, workshops/seminars provided by GC programs; Lowest mean effectiveness ratings were trial and error, online training workshops/seminars, books/journal articles on supervision. Future training interested in feedback from student supervisees, workshop/seminars provided by GC programs, workshops/seminars at regional or national meetings	Supervisors need opportunities to develop supervision skills. Supervisor training could target the competencies with the lowest mean effectiveness ratings.
Suguitan et al., 2019	To elaborate the REM-S by identifying supervisor strategies for each of the 16 goals.	Qualitative with three focus groups	Board certified genetic counselors; GC supervisors	GC supervisors use many strategies when working with GC students, all of which fit into one of 14 domains that support the use of the REM-S as a model for GC supervision.	Most challenging feedback that which is about student behavior rather than personal traits; based on student developmental level. Strategies for the use of the REM-S were found across 14 domains: assessment of student, collaborate with health professionals with student, empower student, establish student goals and expectations, establish good communication with student, establish working alliance with student, facilitate patient care with student, gather information from/with student, give information to student, practice self-reflection to increase supervisor self-awareness, provide culturally competent supervision, provide pre- and post-clinical sessions, provide resources to student, and use psychosocial counseling skills/strategies in supervision	GC supervisors are already using strategies to support students. Supervisor training could include strategy examples for difficulties with a specific domain

Abbreviations: GC, Genetic Counseling; REM-S: Reciprocal Engagement Model – Supervision.



TABLE 4 Theme: difficulties in supervision

Reference	Objective	Study design	Population studied	Evaluative summary	Key findings	Implications
Allsbrook et al., 2016	To determine if there was a difference in compassion fatigue and burnout levels in genetic counselors who currently supervise compared to genetic counselors who do not	Quantitative Scales used: Professional Quality of Life Scale (Stamm, 2017), the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), and original questions regarding clinical and GC supervision experience	Genetic counselors — supervisors and non-supervisors	Supervision by itself does not increase burnout or compassion fatigue.	Genetic counselors may be more likely to perceive supervision as stressful and to experience state-anxiety when providing supervision. For current supervisors, increased years of supervision experience was found to be associated with lower risk for secondary traumatic stress. When genetic counselors feel comfortable in the role of supervisor, they are more likely to experience satisfaction from their work.	Supervisor training could include ways to increase supervisors' confidence and provide resources to address compassion fatigue and trait anxiety, and ways to recognize these and seek help.
Gu et al., 2011	To investigate boundary issues between GC students and supervisors	Quantitative, with open-ended questions qualitatively analyzed Survey used: Original, created from literature and team's personal experiences	GC students, supervisors and non-supervisors	This paper provides a list of challenging boundary situations and how to resolve boundary issues, appropriate/inappropriate boundaries, and examples about how supervisors/students have felt when boundaries were crossed.	A positive genetic counselor/student relationship was associated with discussion about boundaries and multiple relationships (e.g., supervisor and work study director) at the beginning of a rotation. Supervisors are responsible for establishing, clarifying, and maintaining boundaries for the professional relationship, periodically engaging students in evaluating the relationship and suspending non-essential genetic counselor/student interactions until supervision ends	Supervisors need to establish and continuously monitor the supervisory relationship to make sure that it is working for both parties. Supervision training could include an example informed consent document for orientation.
Kyung Lee et al., 2009	To investigate relationships among genetic counselor supervisors' perceived multicultural counseling competence and development as supervisors and their ability to evaluate a supervisee's multicultural skills	Mixed methods — quantitative analysis for survey, and open-ended items were qualitatively analyzed Surveys used: PSDS (Watkins et al., 1995), Multicultural Counseling Knowledge and Awareness Scale (Ponterotto, Gretchen, Utsey, Rieger, & Austin, 2002) and a supervision vignette	GC supervisors	Supervisors who feel they are more culturally better at supervising/mentoring cultural competency	Supervisors who were the most accurate in evaluating the student's multicultural strategies fit the following profile: tended to perceive themselves as more multiculturally aware and knowledgeable, more developed as a supervisor, younger, and had more years of GC supervision experience.	Supervision training could provide approaches to: <ol style="list-style-type: none"> <li>1. encourage supervisors to initiate discussion of multicultural issues in supervision</li> <li>2. be focused on multicultural issues</li> <li>3. utilize multicultural resources within institution</li> <li>4. teach cultural issues, but by way of oversimplification</li> </ol>

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TABLE 4 (Continued)

Reference	Objective	Study design	Population studied	Evaluative summary	Key findings	Implications
MacFarlane et al., 2016	To investigate how anxiety affects the experience of supervision for GC students	Mixed methods: quantitative analysis of the STAI (Spielberger et al., 1983) to determine anxiety level, then qualitative for follow-up telephone interview	Second year GC students	Examined the potential differences in the way supervisees perceive supervision across different levels of anxiety. It provides categories for how the relationship is perceived/influenced by anxiety, as well as recommendations for adjusting.	Anxiety is the primary cause of supervisee resistance. Anxiety is linked to decreased ability to focus, learn and improve; tendency to distort reality; engage in power struggles; conceal problems; students withholding information from supervisors. Student self-assessment of how anxiety affects them — the low anxiety group did not perceive their anxiety as problematic while the high anxiety group did. Egocentric responses — students are thinking about themselves, not patients, while in school. Students are thinking about the supervisor rather than patients; value supervisor evaluations more than patient care. Strong supervisory relationship has been linked to decreased stress, role conflict, role ambiguity, increased coping, work satisfaction.	Ongoing assessment and discussion of the supervisory relationship could help prevent challenging situations; including spending extra time and energy building rapport (e.g., normalization of anxiety). Feedback should be specific and include both positive and constructive items. Supervision training could include how to use the supervisory working alliance to decrease anxiety, and how to provide useful feedback.
McIntosh et al., 2006	To determine if game-playing occurs in genetic counseling student/supervisor relationships	Qualitative Survey used: Original	Genetic counselors and students	Includes most common student-initiated and supervisory-initiated games. Some of these are well described in other fields, and some are newly described in the GC community. The paper also provides a table for how to stop specific games.	Supervisor game playing may be a symptom of the lack of training of supervisors. Suggest that supervisor participation in supervision groups and supervisor training may be helpful to reduce game playing. Most common games cited involved giving feedback.	Tables provide specific games and tools for how to stop the games, both from a supervisor's and student's perspective. This helps both sides of the supervision relationship to identify what is happening and how to keep it from continuing. Supervision training could include a definition of "games" and examples from each side, as well as how to spot and stop a game from continuing.

(Continues)

**TABLE 4** (Continued)

Reference	Objective	Study design	Population studied	Evaluative summary	Key findings	Implications
Vanneste, Chiu, Russell, & Fitzpatrick, 2013a	To determine if training, counseling and supervising in another language differ from performing those activities in one's first language. If so, how could this knowledge be used to improve the training of bi/multilingual students?	Mixed methods: Qualitative then survey analyzed both qualitatively and quantitatively First: two focus groups and two interviews This created a 67-item questionnaire with both open and closed questions	Genetic counselors and GC students	Language in which a session is performed may be an additional factor that alters and/or complicates supervision and the student-supervisor relationship	People have more difficulty attending to an entire session (informational and psychosocial) if they are counseling in their non-primary language. With the introduction of another language into a clinical rotation, some students may be taking a step backwards in their training, particularly with psychosocial issues.	Supervisor training could raise awareness of the needs of multilingual GC students and possible issues GC students and supervisors might face when another language is involved in supervision and training.

Abbreviations: GC, Genetic counseling; PSDS, Psychotherapy Supervisor Development Scale; STAI, State-Trait Anxiety Inventory.

Coleman, 2010), and *Form follows Function* (Wherley, Veach, Martyr, & LeRoy, 2015; Table 1). Each of these papers provides a background for supervisors to develop training skills. Both Borders et al. and Venne and Coleman provide scaffolding for how to teach specific issues – either psychosocial skills (Borders et al., 2006) or how to empower the different personalities of Millennial learners (Venne & Coleman, 2010). They both provide specific steps/activities for how to increase responsibility and independence of the supervisee. Wherley et al. (2015) modify the Reciprocal Engagement Model (REM) of GC (Veach, Bartels, & Leroy, 2007) for use in supervision, creating an isoform they call the REM-Supervision or REM-S. They state “supervisors can deliberately direct genetic counseling through supervision by structuring supervision to reflect the intended structure of counseling and/or by modeling desired behaviors in interactions with supervisees.” This model uses the tenets of Education, Individual Attributes, and Relationship in a three-way reciprocal interaction to encourage specific supervision outcomes. They provide goals of the tenets and specific strategies that supervisors can use to obtain these outcomes.

### 3.2 | Competencies

Separate from GC competencies are those of GC supervision, developed through a modified Delphi study conducted by Eubanks Higgins et al. (2013; Table 2). They used purposeful surveying of program directors and clinical supervisors to come up with a list of 158 competencies in six domains that are specific and measurable (see Table 2). Atzinger, He, and Wusik (2016) used six of these competencies that were related to the learning objectives of their conference: use supervisory methods appropriate to students' level of conceptual development, training, and experience; provide a balance of challenge and support appropriate to student developmental level and experience; prioritize feedback based on student developmental level; provide feedback that is objective; evaluate student performance and skill development; and deal with student resistance in productive ways. They found that the single-day conference was sufficient to increase supervisors' perceptions of their own competence, independence, self-awareness, and identification with the supervision role both 1-week and 6-month post-conference. Finley, Veach, MacFarlane, LeRoy, and Callanan (2016) measured supervisors' perceptions of their capabilities to perform competencies related to the goal setting and feedback domains (Eubanks Higgins et al., 2013). Overall, they found supervisors perceived themselves proficient in goal setting and feedback. There were a few areas that they found more challenging: setting developmentally appropriate goals; incorporating previous supervisor feedback into goal setting; providing feedback about student behavior (not personal traits); feedback based on student developmental level; and feedback that is honest. Some supervisors struggle with students' negative reactions to feedback.

### 3.3 | Investigation of techniques

All three papers, Hendrickson et al. (2002), Lindh et al. (2003), and Finley et al. (2016), found that genetic counselors use live supervision

**TABLE 5** Theme: barriers

Reference	Objective	Study design	Population studied	Barrier to:	Evaluative summary	Key findings	Implications
Allsbrook et al., 2016	To determine if there was a difference in compassion fatigue and burnout levels in genetic counselors who currently supervise compared to genetic counselors who do not	Quantitative Scales used: Professional Quality of Life Scale (Stamm, 2017), STAI (Spielberger et al., 1983), and original questions regarding clinical and GC supervision experience	Genetic counselors	Being supervisors	This paper is about burnout and compassion fatigue, but some of the information hinted at reasons that genetic counselors choose not to supervise students.	Some supervisors indicated that working with students increases burnout due to time commitment and frustration at the lack of motivation for some students.	Work with supervisors to effectively structure their time with students and provide information about remediation.
Berg et al., 2018	To determine barriers to the expansion of supervision networks at genetic counseling training programs as perceived by key stakeholders.	Quantitative Survey used: Original	Program directors, supervisors and non-supervisors	Being supervisors	Barriers for GC supervisors and non-supervisors were identified and suggestions provided for how to decrease these barriers.	Major barriers for supervisors include a lack of time, balancing too many other responsibilities, the intensive nature of the breaks throughout the year, and unfilled positions at institution. Non-supervisors common barriers include never been asked, being a new graduate, distance from a program, and perceived lack of countable logbook cases.	Non-supervisors are mostly willing to supervise if: (1) accrued more years of experience; (2) a GC training program opened nearby; (3) could supervise summer students. Both supervisors and non-supervisors need assistance with time utilization management; increasing genetic counseling assistant help. For distance counselors, consider doing a school year rotation there and distance learning back to home institution. They also suggest expanding the definition of a countable case, as well as increase availability of supervisor trainings.

(Continues)

TABLE 5 (Continued)

Reference	Objective	Study design	Population studied	Barrier to:	Evaluative summary	Key findings	Implications
Masunga et al., 2014	To identify barriers supervisors face when implementing different supervision techniques	Quantitative Survey used: Original	GC supervisors	Expanding methods of supervision	Surveyed current and former GC supervisors to see what methods they used for supervision among a list of possibilities: live supervision (co-counseling vs. silent in room vs. observe from outside room); review of video recording; review of audio recording; review of student self-report. Provided a list of barriers for each category.	100% of genetic counselors surveyed used live supervision. The amount of supervision is inversely correlated with the amount of training the student has (more training, less direct supervision [more likely to do silent in room/student self-report]). Most common barrier: Live — co-counseling: time Live — silent: time Live — remote observation: lack of facilities/equipment Video recording: lack of facilities/equipment Audio recording: Lack of facilities/equipment Self-report: concern for patient welfare	Supervisors naturally scaffold their supervision style — students who are more advanced have less genetic counselor interaction in their sessions. Supervisors need more time for supervision. Alternative techniques to live supervision have benefits for both students (reduce anxiety, increase confidence) and supervisors (decrease time)
Atzinger et al., 2014b	To investigate the impact of supervision training and supervisory and clinical experience on supervisory identity development and perceived confidence and competence of supervisory skills	Quantitative Scale used: PSDS (Watkins et al., 1995) and Original	Genetic counselors	Supervisor Training	Clinical experience, supervision experience, and formal supervision training all were positively associated with supervisors' feelings of confidence and competence in their role as clinical supervisors.	Formal and informal training increased feelings of supervision competence among GC supervisors. Higher PSDS scores were associated with having formal training versus not having formal training. Barriers included no opportunities for training, lack of time for training, and scheduling difficulties.	Training was positively related to supervisory identity development among GC supervisors. There was a general interest in supervision training, but a perception that this training is unavailable. Need to develop formal supervision training opportunities in different formats that are available to all genetic counselors.

Abbreviations: GC, Genetic counseling; PSDS: Psychotherapy Supervisor Development Scale; STAI, State-Trait Anxiety Inventory.

as their primary method of supervision (Table 3). They all found *Trial and Error* to be one of the most common methods of supervision skill development, followed by *Consultation with Colleagues* and *Following own Supervisors' Methods*. All three papers also suggested that there needs to be increased training of supervisors and increased communication between supervisors and students to create a better working alliance. Lindh et al. (2003) also noted that this type of informal training is not sufficient and there should be a minimum amount of practice for a genetic counselor before becoming a supervisor. Finley et al. (2016) found that increased numbers of supervised students led to a more self-efficacious supervisor in their supervisory skills. Suguitan, McCarthy Veach, LeRoy, Wherley, and Redlinger-Grosse (2019) looked at a different aspect of GC supervision — what strategies do supervisors use to attain the Goals and Tenets of the REM-S supervision model. They found 14 strategy domains that supervisors use to help students. The most common strategies found were “Provide student feedback” and “Practice targeted skills with student.” They also provide a summary table that includes the REM-S tenets and goals, the strategy domain, and a specific strategy example that can be used in supervisor trainings or for reference.

### 3.4 | Difficulties in supervision

One reason that genetic counselors decide not to be supervisors is due to difficulties they may have with students (Allsbrook et al., 2016; Table 4). The plurality of papers in the GC supervision field are surrounding some of these difficulties. These six papers included the following: compassion fatigue/burnout from being a supervisor (Allsbrook et al., 2016), boundary issues (Gu, McCarthy Veach, Eubanks, LeRoy, & Callanan, 2011), multiculturalism/competence (Kyung Lee, McCarthy Veach, & LeRoy, 2009), anxiety (MacFarlane, McCarthy Veach, Grier, Meister, & LeRoy, 2016), games (McIntosh, Dircks, Fitzpatrick, & Shuman, 2006), and language issues (Vanneste et al., 2013a). Each of these papers explored difficult aspects of the GC supervisor/student relationship, but all either suggest increasing the supervision working alliance or working with the GC program to identify ways to leverage existing resources to provide supervision training.

### 3.5 | Barriers

Four papers addressed different aspects of barriers in GC supervision (Table 5). Some genetic counselors chose not to be supervisors due to difficulties with students, time issues, being a new graduate, not near a GC training program, having types of cases that do not count toward logbooks, or never having been asked to supervise (Allsbrook et al., 2016; Berg et al., 2018). The format of GC supervision, which is usually live supervision, was noted to be challenging from a time point-of-view for some genetic counselors. However, using other formats, such as video or audio recordings or student self-report, was also found to be barriers for some genetic counselors (Masunga, Wusik, He, Yager, & Atzinger, 2014). In the latter case, the authors suggested strengthening the supervisory working alliance or restructuring supervision methodology to make better use

of time with students. In addition, there was a perceived barrier to supervision training found, including lack of local or national formal training options (Atzinger et al., 2014b; Berg et al., 2018).

## 4 | DISCUSSION

This systematic review summarizes the literature to date on GC clinical supervision. The main goal of the review was to use this information to develop standardized supervision training. We found 19 papers related to GC clinical supervision, which fell into five themes: Models of Supervision, Competencies, Investigation of Techniques, Difficulties in Supervision, and Barriers.

Our findings indicate that there are many known issues in GC supervision, but each paper also provides approaches toward assessing and fixing these issues. Some of the main items that are repeated in the literature are those of the supervisory working alliance, self-efficacy, and peer supervision.

### 4.1 | Supervisory relationship/alliance

Many of the papers reviewed here noted that supervisory issues may be managed through a strong supervisory working alliance (SWA), also known as the supervisory relationship. The SWA is the collaboration between the trainee and supervisor to create trainee change based on mutual agreement of the goals and tasks of supervision, and includes a strong emotional bond (Ladany & Friedlander, 1995). Specifically, the supervisor can attempt to build rapport, create a bond, or otherwise get to know the student to build the supervisory relationship (Suguitan et al., 2019). The supervisory relationship is important because, when strong, students feel less stress (Caldwell, Wusik, He, Yager, & Atzinger, 2018; Gnilka, Chang, & Dew, 2012), less role conflict or role ambiguity (Ladany & Friedlander, 1995), are more able to cope, are more willing to trust the supervisors' feedback, and feel less anxious while with patients and the supervisor (MacFarlane et al., 2016). The working alliance is integral to GC student supervision (Wherley et al., 2015), but this relationship is not always addressed in a rotation. In order to help establish and strengthen the working alliance, genetic counselors can utilize specific strategies: establish student goals for the rotation; ask questions about the student's perceived strengths; introduce the student to the professional health team; discuss communication styles with the student; establish expectations to increase openness and approachability; build rapport based on shared culture; share known patient background to student; use psychosocial counseling skills and strategies in supervision, such as primary empathy (Suguitan et al., 2019). This is an easy place for genetic counselors to spend small amounts of time to make a big impact on their students' rotations.

### 4.2 | Self-efficacy

The main outcome measure that has been used in GC supervision literature is that of self-efficacy, which is the perception

of one's own ability. It has been used to measure: confidence in multiculturalism skills (Kyung Lee et al., 2009); confidence and competence as supervisors correlated to supervision experience and formal supervision training (Atzinger et al., 2014b, 2016; Finley et al., 2016); and student perceptions of their own training (Caldwell et al., 2018). A problem, though, is that self-efficacy does not necessarily mean that someone is competent — it means they *feel* competent. An outcome measure that takes into account students', program directors' and supervisors' perceptions of success is needed to elevate our training and abilities for and as supervisors.

### 4.3 | Peer supervision

Peer supervision involves an arrangement in which peers work together for mutual benefit to improve professional communication and provide support (Weil, 2000). Peer supervision has been shown to be helpful and recommended in GC processing (Doyle et al., 2016) and is a large part of the wider mental health professions, including psychology, psychiatry, and social work (Kennedy, 2000; Sterner, 2009). Several of the papers included in this systematic review either directly or indirectly noted that peer supervision related specifically to supervision skills could be beneficial for improving GC supervision. For example, GC supervisors learn better supervision techniques through consultation with others (Finley et al., 2016; Lindh et al., 2003; Suguitan et al., 2019). This is also supported by the ACGC practice-based competencies, which note that genetic counselors should be involved in active reflection of one's supervision experiences (Doyle et al., 2016). Using peer supervision groups, genetic counselors can have a supportive environment to discuss challenging student issues or reflect on personal supervision styles. These groups can meet more often than the GC programs may provide formal supervisor training, and participants can potentially receive peer feedback before a student has finished a rotation, decreasing the amount of trial-and-error learning (Atzinger et al., 2014b; Finley et al., 2016; Hendrickson et al., 2002; Lindh et al., 2003). Combining these items, it is reasonable to think that peer supervision related to clinical supervision is a gateway to better supervision for GC students, and should be encouraged for all practicing genetic counselors. There is an issue of the *Journal of Genetic Counseling* dedicated to the topic of peer supervision for clinical practice (2000, Volume 9, Issue 5), which can be explored by interested genetic counselors.

### 4.4 | Study limitations

This is the first paper summarizing an exhaustive list of the GC clinical supervision literature. While all research known at the time of the literature search was included, there were several works that were theoretical in nature (Borders et al., 2006; Venne & Coleman, 2010; Wherley et al., 2015) and were unable to be analyzed as thoroughly as the qualitative and quantitative papers. The literature is primarily concerned with clinical supervision, but administrative supervision — such as how to order a test or how to find the CPT

codes — is largely overlooked (McCarthy & LeRoy, 1998). Our search results found exclusively articles written in the United States and Canada, based on studies performed therein. Thereby, these results are not necessarily generalizable to the worldwide network of genetic counselors and GC supervision training. By excluding peer supervision articles, this review did not explore all opportunities for genetic counselors to educate themselves and increase their self-efficacy. A thorough review of peer supervision techniques would be a complementary addition to this paper and the field at large. Finally, the clinical psychology and social work fields also have vast body of knowledge from which to draw supervision training modalities, successes, and theories. These can be further tapped to help develop GC supervision training programs.

### 4.5 | Research recommendations

Given that this review was performed to help inform future supervision trainings, and the literature has found that trainings should target the areas where supervisors feel the least competent, we recommended that each program research what parts of supervision are most challenging for their supervisors prior to setting up their local trainings. This could be similar to the Atzinger et al.'s (2016) study, or a smaller, one-time survey to their supervisors. As the field of GC supervision is young, there are several areas that have not been researched. Logistical issues of supervision, such as obtaining inter-institutional agreements, are not well discussed in the literature, and more can be done to flesh this out as an issue or barrier to onboarding more supervisors. Future research could also look at administrative supervision and if/how this is performed in a rotation, and if there are differences in how this is performed based on type of rotation or development of the student. The concept of supervision of supervisors has not been explored within the GC field, and it is unknown how common this practice is. Having standardized and formalized processes for a program to use with their supervisors may make supervision easier for both novice supervisors and students, and should help the supervision expectations become more homogeneous between rotations. It would be beneficial to the field to see how supervision training is performed internationally. Finally, there are no outcome measures that evaluate how a supervisor performs; nor is there a good definition for what makes a good supervisor. Future research should aim at defining successes in supervision and developing outcome measures.

### 4.6 | Practice implications

The purpose of this systematic review was to identify points that should be addressed in training courses for GC supervision, both nationally standardized and locally tailored formats. Multiple papers found that genetic counselors have an interest in additional and more accessible supervisor trainings (Atzinger et al., 2014b; Berg et al., 2018; Finley et al., 2016; Lindh et al., 2003; McIntosh et al., 2006). The final column of Tables 1–5 include the evidence for the recommendations made here. GC supervision training could:

- Begin with a review of the known models of supervision (Borders et al., 2006; Venne & Coleman, 2010; Wherley et al., 2015). This should include definitions of Millennial learners, scaffolding (including examples), and authentic learning (Atzinger et al., 2016; Suguitan et al., 2019).
- Provide a copy of the GC supervision competencies (Eubanks-Higgins et al., 2013). These can be interrogated prior to the training to find those with the lowest self-efficacy among supervisors. Training can then be tailored accordingly (Atzinger et al., 2016; Finley et al., 2016). Previous lowly rated competencies or issues included:
  - *I can respond to a student's thoughts regarding their clinical skills in a manner that enhances the supervision process and I can elicit a student's feelings regarding their clinical skills; I can use the ABGC practice-based competencies to set goals; and I can identify learning needs of a student at various levels of experience* (Finley et al., 2016).
  - Supervisor struggles, including difficult student personalities (Hendrickson et al., 2002; Venne & Coleman, 2010)
  - Disagreement on student skill level (Atzinger et al., 2016).
  - Working with novice versus advanced students in clinical rotations (Eubanks Higgins et al., 2013)
  - Evaluation and supervision methods (Eubanks Higgins et al., 2013)
  - Discuss the supervisory working alliance and strategies to strengthen the relationship between GC supervisor and student (Berg et al., 2018; Caldwell et al., 2018; Eubanks Higgins et al., 2013; MacFarlane et al., 2016; Suguitan et al., 2019).
  - Discuss creative ways to reduce the amount of time genetic counselors need to spend in supervision (Berg et al., 2018). This can include discussion of other methods of supervision besides live supervision, such as listening to recordings at 1.5× speed or student self-report, depending on the developmental level of the student (Hendrickson et al., 2002; MacFarlane et al., 2016; Masunga et al., 2014; McCarthy & LeRoy, 1998).
  - Include information about the particular GC program. Supervisors may not know background information, such as total number of cases that are usually seen per student during the program or remediation policies (Berg et al., 2018; Lindh et al., 2003). Not having this information could lead to barriers to becoming supervisors.
  - Include information about and solutions to previously identified Difficulties in Supervision:
    - Increase supervisors' confidence and provide resources to address compassion fatigue and trait anxiety, ways to recognize these and seek help (Allsbrook et al., 2016).
    - Boundary issues and resolution (e.g., through an informed consent document; Gu et al., 2011).
    - Include cultural competency in the rotation (e.g., drawing attention to when sessions are tailored to the cultural identity of the patient/family/student; Kyung Lee et al., 2009).
    - Recognize student anxiety is normal, how to use the SWA to decrease anxiety, and how to provide useful feedback (MacFarlane et al., 2016).

- Define supervision and student "games," examples from each side, and how to spot and stop a game from continuing (McIntosh et al., 2006).
- Raise awareness of the needs of multilingual GC students and possible issues GC students and supervisors might face when another language is involved in supervision and training (Vanneste et al., 2013a).

Finally, while not part of the goal of this systematic review, several strategies to help GC supervisors and program directors, outside of a training, were also identified. These could include the following:

- Pairing a novice GC supervisor with a more experienced supervisor as a mentor. This can help the novice supervisor feel more comfortable and confident with few students supervised (Allsbrook et al., 2016).
- The competencies can be used by supervisors as a guide for their rotations. For example: *Conduct an orientation with a contract regarding the details of the clinical placement and supervisory relationship, as well as set realistic learning goals with student and comment on positive changes made by students in response to feedback* (Eubanks Higgins et al., 2013).
- Supervisors can create an informed consent to review with students to orient them to the rotation, expectations, how to handle boundary issues (e.g., more than one relationship present between student and supervisor; Gu et al., 2011; Hendrickson et al., 2002; McCarthy & LeRoy, 1998).
- It may be that some students are seeing more patients than are necessary per rotation (Owens-Thomas, Wusik, He, Yager, & Atzinger, 2019). Setting shorter rotations or giving more breaks to supervisors may also be a way to reduce GC supervisor burden (Berg et al., 2018).
- Program directors could potentially increase supervisors by utilizing genetic counselors farther away from a training program during summer rotations. These same supervisors may also be available during the school year, and program directors could consider having the student at an offsite rotation and use distance learning back to the institution for didactics (Berg et al., 2018).
- The ABGC/ACGC could look at the current state of genetic counselors and service delivery and expand the definition of a countable case so more genetic counselors who are in non-patient-facing roles can add to logbook cases (Berg et al., 2018).

## 5 | CONCLUSION

Students find supervision to be the most positive part about a rotation, specifically around getting feedback and having feelings of being supported or trusted (MacFarlane et al., 2016). This systematic review identified 19 papers that are specific to GC clinical supervision, including models of supervision, difficulties with students, barriers, and possible solutions to the issues found. By using this review and the Practice Implications as a guide, supervision trainings can



be set up to be more frequent and readily accessible to all genetic counselors and improve the supervision experience for both genetic counselors and supervisors.

## AUTHOR CONTRIBUTIONS

CES contributed to study design. CES and CLA both contributed to data analysis and manuscript preparation.

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## COMPLIANCE WITH ETHICAL STANDARDS

### Conflicts of interest

Carly E Siskind and Carrie L Atzinger declare they have no conflicts of interest.

### Human studies and informed consent

No humans were used as part of this study. Informed consent was not sought.

### Animal studies

No non-human animal studies were carried out by the authors for this article.

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