August 15, 2025

Fairtility Ltd.
% Susan Alpert
Official Correspondent
SFADC LLC
2425 L Street NW, Apt 307
Washington, District of Columbia 20037

Re: K243851
Trade/Device Name: CHLOE BLAST
Regulation Number: 21 CFR 884.6195
Regulation Name: Assisted Reproduction Embryo Image Assessment System
Regulatory Class: II
Product Code: PBH
Dated: July 13, 2025
Received: July 14, 2025

Dear Susan Alpert:

We have reviewed your section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (the Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. Although this letter refers to your product as a device, please be aware that some cleared products may instead be combination products. The 510(k) Premarket Notification Database available at https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm identifies combination product submissions. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you, however, that device labeling must be truthful and not misleading.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Additional information about changes that may require a new premarket notification are provided in the FDA guidance documents entitled "Deciding When to Submit a 510(k) for a Change to an Existing Device"

(https://www.fda.gov/media/99812/download) and "Deciding When to Submit a 510(k) for a Software Change to an Existing Device" (https://www.fda.gov/media/99785/download).

Your device is also subject to, among other requirements, the Quality System (QS) regulation (21 CFR Part 820), which includes, but is not limited to, 21 CFR 820.30, Design controls; 21 CFR 820.90, Nonconforming product; and 21 CFR 820.100, Corrective and preventive action. Please note that regardless of whether a change requires premarket review, the QS regulation requires device manufacturers to review and approve changes to device design and production (21 CFR 820.30 and 21 CFR 820.70) and document changes and approvals in the device master record (21 CFR 820.181).

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801); medical device reporting (reporting of medical device-related adverse events) (21 CFR Part 803) for devices or postmarketing safety reporting (21 CFR Part 4, Subpart B) for combination products (see https://www.fda.gov/combination-products/guidance-regulatory-information/postmarketing-safety-reporting-combination-products); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820) for devices or current good manufacturing practices (21 CFR Part 4, Subpart A) for combination products; and, if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR Parts 1000-1050.

All medical devices, including Class I and unclassified devices and combination product device constituent parts are required to be in compliance with the final Unique Device Identification System rule ("UDI Rule"). The UDI Rule requires, among other things, that a device bear a unique device identifier (UDI) on its label and package (21 CFR 801.20(a)) unless an exception or alternative applies (21 CFR 801.20(b)) and that the dates on the device label be formatted in accordance with 21 CFR 801.18. The UDI Rule (21 CFR 830.300(a) and 830.320(b)) also requires that certain information be submitted to the Global Unique Device Identification Database (GUDID) (21 CFR Part 830 Subpart E). For additional information on these requirements, please see the UDI System webpage at https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance/unique-device-identification-system-udi-system.

Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to https://www.fda.gov/medical-devices/medical-device-safety/medical-device-reporting-mdr-how-report-medical-device-problems.

For comprehensive regulatory information about medical devices and radiation-emitting products, including information about labeling regulations, please see Device Advice (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance) and CDRH Learn (https://www.fda.gov/training-and-continuing-education/cdrh-learn). Additionally, you may contact the Division of Industry and Consumer Education (DICE) to ask a question about a specific regulatory topic. See

the DICE website (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance/contact-us-division-industry-and-consumer-education-dice) for more information or contact DICE by email (DICE@fda.hhs.gov) or phone (1-800-638-2041 or 301-796-7100).

Sincerely,

Monica D. Garcia -S

Monica D. Garcia, Ph.D.
Assistant Director
DHT3B: Division of Reproductive,
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OHT3: Office of Gastrorenal, ObGyn,
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Center for Devices and Radiological Health

Enclosure

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Food and Drug Administration

Indications for Use

Form Approved: OMB No. 0910-0120
Expiration Date: 07/31/2026
See PRA Statement below.

Submission Number *(if known)*

K243851

Device Name

CHLOE BLAST

Indications for Use *(Describe)*

CHLOE BLAST is indicated to provide adjunctive information on events occurring during embryo development that may predict further development to the blastocyst stage on Day 5 of development. This adjunctive information aids in the selection of embryo(s) for transfer on Day 3, when, following morphological assessment, there are multiple embryos deemed suitable for transfer or freezing.

CHLOE BLAST is to be used only for the analysis of images captured by the EmbryoScope version D incubator system.

Type of Use *(Select one or both, as applicable)*

☒ Prescription Use (Part 21 CFR 801 Subpart D) ☐ Over-The-Counter Use (21 CFR 801 Subpart C)

CONTINUE ON A SEPARATE PAGE IF NEEDED.

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510k Summary – CHLOE BLAST

K243851

1. Submitter Information

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2. Date Prepared: August 14, 2025

3. Device Information

Device Trade Name:	CHLOE BLAST
Common Name:	Assisted Reproduction Embryo Image Assessment System
Regulatory Class	II
Regulation Number:	21 CFR 884.6195
Regulation Name:	Assisted Reproduction Embryo Image Assessment System
Product Code:	PBH (Embryo Image Assessment System, Assisted Reproduction)

4. Predicate Device

EEVA 2.0, DEN120015, Auxogyn Inc.

The predicate device has not been subject to a design-related recall.

5. Device Description

CHLOE BLAST is a decision support tool designed to automatically analyze time lapse videos of developing embryos, retrieved from EmbryoScope (version D) Time Lapse Incubators (TLI) system. It is intended to provide adjunctive information on developmental events up to Day 3 that may predict progression to the blastocyst stage by Day 5.

CHLOE BLAST is a cloud-based software as a medical device (SaMD) that uses a convolutional neural network (CNN) to analyze TLI videos from insemination to Day 3. The output is the

"CHLOE Score", which is a blastocyst development prediction value associated with the likelihood of the embryo reaching blastocyst stage at Day 5.

This information aids in the selection of embryo(s) for transfer on Day 3, when, following morphological assessment, there are multiple normally fertilized embryos deemed suitable for transfer or freezing. In a clinical setting, the CHLOE score is intended to be used by the embryologist as adjunctive information, to be used only after the embryologists complete their independent morphological assessments based on the lab's standard of care (e.g., Istanbul Consensus Grading).

The main user interaction is via the graphic user interface (GUI) available via Chrome browsers. It includes screens for treatments overview, manual embryo assessment, and score presentation, and integrates with the day-to-day normal operation in IVF clinics using TLI.

6. Intended Use/Indications for Use

CHLOE BLAST is indicated to provide adjunctive information on events occurring during embryo development that may predict further development to the blastocyst stage on Day 5 of development. This adjunctive information aids in the selection of embryo(s) for transfer on Day 3, when, following morphological assessment, there are multiple embryos deemed suitable for transfer or freezing.

CHLOE BLAST is to be used only for the analysis of images captured by the EmbryoScope version D incubator system.

7. Comparison of Intended Use and Technological Characteristics of the Subject and Predicate Device

7.1. Intended Use

	Subject device (K243851) – CHLOE BLAST	**Predicate device (DEN120015) – EEVA 2.0**
Indications for Use	CHLOE BLAST is indicated to provide adjunctive information on events occurring during embryo development that may predict further development to the blastocyst stage on Day 5 of development. This adjunctive information aids in the selection of embryo(s) for transfer on Day 3, when, following morphological assessment, there are multiple embryos deemed suitable for transfer or freezing. CHLOE BLAST is to be used only for the analysis of images captured by the EmbryoScope version D incubator system.	The Eeva System is indicated to provide adjunctive information on events occurring during the first two days of development that may predict further development to the blastocyst stage on Day 5 of development. This adjunctive information aids in the selection of embryo(s) for transfer on Day 3 when, following morphological assessment on Day 3, there are multiple embryos deemed suitable for transfer or freezing. The device may also be used to collect additional time-lapse images until Day 5 of development for embryos not selected for transfer, to allow monitoring of continued embryo development.

The intended use of the subject device is the same as the predicate device – both are intended to provide adjunctive information (decision support) to the embryologist/clinician at Day 3 of culture to aid the user in selecting embryos for transfer/freezing during assisted reproduction procedures.

7.2. Technological Characteristics

Characteristics	Subject Device K243851	Predicate Device DEN120015	Comparison
Manufacturer	Fairtility	Auxogyn Inc.	N/A
Trade name	CHLOE BLAST	EEVA 2.0	N/A
Device Design	Software that automatically analyzes and identifies embryo development events from images captured by Embryoscope version D (K111715) for use in a blastocyst prediction model.	Time-lapse system used in conventional incubator with analysis software that automatically identifies embryo development events for use in a blastocyst prediction model.	**Different:** The subject device is a software accessory to be used with the Embryoscope imaging incubator to provide adjunctive information regarding blastocyst quality. The predicate device is a time lapse imaging system to be used in a conventional incubator that utilizes automated image analysis to provide adjunctive blastocyst quality information. These differences do not raise different questions of safety and effectiveness.
Algorithm	Software Cell tracking and event inference used as algorithm inputs.	Software Cell tracking and event inference used as algorithm inputs.	Same
Annotation method	Image analysis software automatically identifies embryo development events and timing.	Image analysis software automatically identifies embryo development events and timing.	Same

The technological characteristics of the subject and predicate device are different – the subject device has different predictive algorithms for blastocyst quality, and different software and annotation functions. However, different questions of safety and effectiveness are not raised by these differences in technological characteristics.

8. Summary of Non-Clinical Performance Testing

Devices classified under 21 CFR 884.6195 (Assisted Reproduction Embryo Image Assessment System) and product code PBH must address several non-clinical special controls, including software validation, verification, and hazard analysis, an assessment of light exposure and output, simulated use, cleaning and disinfection, package integrity and transit testing, electrical safety and electromagnetic compatibility testing, and prediction algorithm reproducibility.

As CHLOE BLAST is a software, some of the special controls do not apply to this submission.

Software was evaluated at the Basic Documentation level as recommended in the 2023 FDA guidance document “Content of Premarket Submissions for Device Software Functions.”

8.1. Performance Testing – Algorithm Validation

The purpose of the test was to assess the performance of the CHLOE BLAST algorithm in predicting an embryo's likelihood to form a blastocyst. The algorithm uses Time-Lapse Incubator (TLI) videos from insemination to Day 3 as an input to make its predictions.

The test included both the verification of the accuracy of the morphokinetic event detection and the overall performance of the algorithm in predicting blastocyst formation.

The dataset used for the performance test was entirely independent from the dataset utilized in the CHLOE BLAST clinical study described in section 9, and the clinics that provided data for the performance dataset were not used to collect data for the clinical study.

Each embryo video was viewed by three independent embryologists who provided their morphokinetic stages and Blast annotations based on the time-lapse videos. The annotators were not involved in the training or tuning of the model and were blinded to each other's labels. The TLI videos were annotated at a frame level with the ground truth of one of the morphokinetic stages and at a video level with blastulation results. Number of pronuclei (PNs) and embryo quality (according to SART) were also annotated to allow subgroup analysis.

The test dataset for the morphokinetic events detection comprised 1,094 embryos collected from two sites, one located in the US and one in Europe (Norway). The data distribution is described in Table 1 below:

Clinic Location		**US**	**Norway**	**Total**
Number of slides		88 (62%)	55 (38%)	143
Number of embryos		671 (61%)	423 (39%)	1094
Number of embryos per slide	Mean (SD)	7.6 (2.9)	7.7 (3.0)	7.7 (2.9)
	Min, Max	1, 12	1, 12	1, 12

Table 1 - MKS Detection Performance Test Data Inventory

The mean age was 36.5 years old (with standard deviation of 4.8) and the mean BMI was 24.1 (with standard deviation of 4.6). The Age and BMI categories distribution is presented in Table 2 below:

	Category	**Total**
Age	Age < 35	44 (30.8%)
	35 ≤ Age < 38	29 (20.3%)
	38 ≤ Age < 41	45 (31.5%)
	41 ≤ Age	25 (17.5%)
BMI	Underweight (<18.5)	5 (3.5%)
	Normal (18.5-24.9)	97 (67.8%)
	Overweight (25-29.9)	24 (16.8%)
	Obese (≥30)	17 (11.9%)

Table 2 - MKS Detection Performance Test Data Distribution

The overall accuracy of the morphokinetic events detection was 0.82 (95% CI: 0.81, 0.84). The Accuracy of the sub-model when used on the sub-population of embryos with 2PNs was 0.84 (95% CI: 0.83, 0.85). The validation acceptance criteria (AUC lower bound >0.8) were met.

When assessing the performance of the morphokinetic events detection across various sub-groups, including age and BMI categories, it was found that the sub-model maintained consistent performance throughout these different categories with the exception of two age groups (<35 and 41≤) and two BMI categories (Underweight and Obese) that didn't meet the predefined acceptance criteria (AUC lower bound >0.8).

The test dataset for the Blast prediction comprised 1,726 embryos collected from two sites, one located in the US and one in Europe (Norway). The data distribution is described in Table 3 below:

Clinic Location		**US**	**Norway**	**Total**
Number of slides		216 (92.7%)	17 (7.3%)	233
Number of embryos		1608 (93%)	118 (7%)	1726
Number of embryos per slide	Mean (SD)	7.4 (3.0)	6.9 (3.2)	7.4 (3.0)
	Min, Max	1, 12	1, 11	1, 12

Table 3 - Blast Prediction Performance Test Data Inventory

The mean age was 37.7 years old (with standard deviation of 4.4) and the mean BMI was 23.3 (with standard deviation of 4.1). The Age and BMI categories distribution is presented in Table 4 below:

	Category	**Total**
Age	Age < 35	49 (21.1%)
	35 ≤ Age < 38	55 (23.7%)
	38 ≤ Age < 41	57 (24.6%)
	41 ≤ Age	71 (30.6%)
BMI	Underweight (<18.5)	10 (4.3%)
	Normal (18.5-24.9)	169 (72.5%)
	Overweight (25-29.9)	36 (15.5%)
	Obese (≥30)	18 (7.7%)

Table 4 - Blast Prediction Performance Test Data Distribution

The AUC of the overall performance of the Blast prediction was 0.88 (95% CI: 0.86, 0.90), and the study acceptance criterion (AUC lower bound >0.8) was met. The AUC-ROC analysis was repeated for the different Maternal Age and BMI categories. In all subgroups, the AUC was similar and higher than 0.8, demonstrating the model performance is preserved over the different subgroups. For one BMI category (Obese), the predefined acceptance criteria (AUC lower bound >0.8) was not met.

A reduction in AUC was observed with AUC of 0.81 (95% CI: 0.78, 0.83) for 2PN embryos and 0.74 (95% CI: 0.69, 0.78) for Good/Fair embryos. The effectiveness of CHLOE BLAST for its intended use as an adjunctive tool to support embryo selection following morphological assessment was further evaluated in the company's clinical study. The study was designed to evaluate the clinical utility of CHLOE BLAST in the population of Good/Fair quality embryos.

Overall, the results of the performance tests indicate that CHLOE is effective in predicting blastocyst formation and that its performance is consistent across various subgroups.

8.2. Reproducibility Test

The test validated the robustness of the algorithm to different inputs, including several different optical augmentations of an embryo video and simulating several technical occlusions that may occur in the TLI (that are not related to CHLOE). The simulated technical occlusions included corruptions involving occasional issues related to mechanical movement and corruptions related to image acquisition by the EmbryoScope Version D. This was done by comparing the algorithm's performance in terms of AUC-ROC against the ground truth (blastocyst Yes/No) on the original (non-augmented videos) with its performance on videos that were augmented to simulate clinical technical errors. Performance was calculated for augmented videos with each type of corruption and for a combination of all corruption types.

AUCs for all augmentations were higher than 0.89, with CI lower bound above 0.87. Thus, the acceptance criterion (AUC lower bound >0.8) was met. It was therefore concluded that the reproducibility of the algorithm under clinical conditions was validated.

The non-clinical performance data demonstrate that CHLOE BLAST meets the applicable Special Controls for Embryo Image Assessment System, Assisted Reproduction.

9. Summary of Clinical Performance Testing

9.1. CHLOE BLAST Clinical Study Overview

To evaluate the safety and effectiveness of CHLOE BLAST, a pivotal, multicenter, single arm, observational, prospective assessment study was conducted to assess the performance of the CHLOE BLAST algorithm for the prediction of blastocyst formation in women undergoing In-Vitro Fertilization.

This was a non-interventional clinical study in which CHLOE BLAST was not used during patient treatment.

9.2. CHLOE BLAST Clinical Study Protocol

Study Summary:

The study evaluated the performance of the CHLOE BLAST algorithm (Odds Ratio and other measures) in the prediction of blastocyst formation using embryo assessment conducted based on Day 3 morphology alone, and on Day 3 morphology with CHLOE score as adjunct information.

The study consisted of 4 parts:

1. Retrospective Data Collection: Time-lapse videos of embryo development and associated maternal and embryo information were collected.

2. Morphology Grading: Three independent embryologists ("Assessors") evaluated embryo development until 68 hours (Day 3) using standard grading techniques, based on time-lapse videos.

3. & 4. Blinded Clinical Assessments: Five independent embryologists ("Panelists") performed two assessments - In the first, they predicted blastocyst formation based on the morphology grading of the Assessors alone, and in the second, they predicted blastocyst formation based on the morphology grading in addition to the CHLOE score. A two-week washout period between parts 3 and 4 was used to ensure unbiased evaluations.

Study Data:

The study dataset included data collected specifically for the purpose of this study according to the predefined inclusion and exclusion criteria and was segregated from algorithm training and verification datasets. The data was collected from three different sites located in the United States from patients who underwent In-Vitro Fertilization (IVF) during 2020-2021. 703 embryos from 59 mothers were included in the study.

Study data contained coded imaging data of embryos cultured at least to Day 5 in an EmbryoScope version D time-lapse incubator set to default settings (i.e., Incubator temperature: 37.0°C, CO_2 concentration: 5%-6%, O_2 concentration: 5% O_2 (balance N_2), Humidity: High (≥90%), Imaging Interval: Every 5-20 min, Focus Mode: Autofocus on each well, Light Intensity: Very low, Image Capture: Multiple focal planes (1-17) per timepoint), as well as the maternal and embryo information.

Morphology Grading and Clinical Assessments:

- *Morphology Grading:* Three embryologists ("Assessors"), blinded to CHLOE information, performed Day 3 morphological grading according to Society for Assisted Reproductive Technology (SART) embryo morphology grading. They reviewed embryo time-lapse videos up to 68 hours and assessed the following parameters:
  - Number of cells (1 through 8, 9≤)
  - Fragmentation (0%, <10%, 11-25%, >25%)
  - Symmetry (Perfect, Moderately Asymmetric, Severely Asymmetric).

  Then, the following parameters were categorized by majority agreement (at least 2 of 3 Assessors):

  - Severe asymmetry (yes/no)
  - Fragmentation > 25% (yes/no)
  - Number of cells (1 through 8, 9≤)
- *Clinical Assessment:* A panel of 5 embryologists ("Panelists") participated in the prediction of blastocyst status. The Panelists in the study were all in practice during the study period and from a range of geographical areas within the United States. Out of the 5 Panelists, 3 were senior embryologists with over 10 years of clinical embryology experience each, and the other 2 were junior embryologists with less than 3 years of clinical embryology experience. The Panelists were not involved in embryo culturing or morphological grading and were blinded to imaging data. There was no overlap between "Assessors" and "Panelists."

  In Clinical Assessment Part 1, each Panelist received the morphological assessments done by the Assessors, along with the mother's age. Based on this information, they completed the following tasks:

  - Assign an embryo category (A: Good, B: Fair+, C: Fair-, D: Poor)
  - Predict developmental outcome (Blastocyst or Arrested)
  - Select the top 2 embryos from each subject's full cohort

  In this part, the Panelists were blinded to the CHLOE score.

  After a two-week washout period, in Clinical Assessment Part 2, the Panelists were given the same information as in Part 1, with the addition of CHLOE score. They then repeated the same three tasks. In this part, the Panelists were blinded to the results of part 1.

9.3. CHLOE BLAST Clinical Study Endpoint

Primary Endpoint:

Association between the adjunct prediction using CHLOE BLAST of blastocyst outcome and the actual blastocyst outcome for Good/Fair embryos, measured by an Odds Ratio (OR) greater than 1. This was used to demonstrate that adjunctive use of CHLOE BLAST leads to embryologist predictions for Day 5 blastulation that are informative for outcome (i.e. blastocyst formation: Yes/No).

Secondary Endpoints:

- OR for predicting blastocyst formation based on adjunct prediction with CHLOE for all embryos.

- OR for predicting blastocyst formation using traditional morphology only, for all embryos as well as for the subset of embryos graded as Good/Fair.
- OR for Good/Fair embryos predicting blastocyst formation for each individual embryologist, using traditional morphology only and using morphology plus CHLOE.
- The following embryo-level diagnostic performance measures: Specificity, Sensitivity, Negative predictive value (NPV), Positive predictive value (PPV), Negative likelihood ratio, Positive likelihood ratio.
- Subgroup analyses (Good/Fair embryos) were conducted for several factors, including age group, BMI category, Race and Ethnicity categories, and clinical site (with CHLOE score).
- Subject-level analysis: a subject-level performance of CHLOE. Of note, the following definitions were used during the analysis:
    - True Positive (TP)
        - 1-2 embryos from the subject are predicted as "Blastocyst" and one of these forms a blastocyst, or
        - >2 embryos are predicted as "Blastocyst" and at least one of the Top 2, as selected by the panelist, forms a blastocyst.
    - False Negative (FN)
        - None of the embryos from the subject are predicted as "Blastocyst" but at least one forms a blastocyst, or
        - 1-2 embryos are predicted as "Blastocyst" but none forms a blastocyst, and at least one other embryo forms a blastocyst, or
        - >2 embryos are predicted as "Blastocyst" but none in the Top 2, as selected by the panelist, forms a blastocyst, and at least one not in the Top 2 forms a blastocyst.
    - False Positive (FP)
        - Some embryos from the subject are predicted as "Blastocyst" but none of the embryos from the subject forms a blastocyst.
    - True Negative (TN)
        - None of the embryos from the subject are predicted as "Blastocyst" and none form a blastocyst.
- Top 2 embryo analysis: analysis of embryos that were selected as one of the top two by at least one panelist based on morphology alone. The analysis was conducted on Good/Fair embryos, following the same methodology used for the analysis of the primary endpoint (Odd Ratio

Note: this was a retrospective, image-based study with no subject interaction. As such, no safety endpoints were applicable or collected, and no adverse events could occur.

9.4. CHLOE BLAST Clinical Study Results

The primary endpoint of the study was met, with blastocyst prediction for Good/Fair embryos using CHLOE achieving an Odds Ratio (OR) of 5.67 (95% CI: 4.6, 6.99), surpassing the prediction without CHLOE (OR=3.77; 95% CI: 2.97, 4.79).

When performing the analysis for all embryos, the prediction was also higher, with OR of 8.51 (95% CI: 6.97, 10.38) for the prediction using CHLOE, compared to 6.93 (95% CI: 5.58, 8.61) for the prediction without CHLOE.

Below is a summary of the performance for Good/Fair embryos across various descriptive diagnostic measures, comparing the use of CHLOE as adjunct information to the use of traditional morphology alone (Clinical Assessment Part 2 / Clinical Assessment Part 1):

- Odd Ratio (95% CI): 5.67 (4.6-6.99) / 3.77 (2.97-4.79)
- Sensitivity: 0.846 / 0.893
- Specificity" 0.444 / 0.246
- PPV (Positive Predictive Value): 0.629 / 0.569
- NPV (Negative predictive Value): 0.721 / 0.675
- Positive likelihood ratio: 1.52 / 1.185
- Negative likelihood ratio: 0.348 / 0.433

To determine the consistency of the Day 3 morphology followed by adjunct use of CHLOE score among individual Panelists, assessments among the Good/Fair morphology embryos were further evaluated per Panelist using the Odds Ratio. When the CHLOE score was used adjunctively to morphology, the Odds Ratio was improved and was greater than 1 for all embryologists.

Repeating the analysis on the subgroups of Age and BMI categories and by site for clinical part 2, showed OR >1 in all subgroups. In all but one age category (≥41) and one BMI category (underweight), the lower bound of the CI was also greater than 1. Analysis of Race and Ethnicity subgroups was found to not support definitive conclusions regarding performance in these groups due to the small number of participants in the non-White and Hispanic subgroups.

A subject level performance analysis presented sensitivity (for the 56 subjects who had at least one embryo reach the blastocyst stage) ranging from 80.36% to 83.93% for traditional morphology, and from 87.50% to 92.86% when using CHLOE (for all panelists). The calculation of specificity was limited due to the small sample size of subjects with all embryos arrested.

An analysis was performed on the subgroup of embryos that were selected as one of the top two by at least one panelist based on morphology alone (Good/Fair embryos), demonstrating OR of 10.73 (95% CI: 6.19, 18.60) for clinical part 2, compared to 3 (95% CI: 0.96, 9.32) for clinical part 1.

9.5. Safety and Adverse Events

This study was retrospective, involving the use of de-identified embryo images collected from completed IVF cycles. The subject device was applied solely to existing image data and was not used for clinical decision-making, did not involve patient contact, and was not deployed in real-time. As such, there was no potential for device-related adverse events to occur within the context of the study and hence adverse events were not collected.

9.6. CHLOE BLAST Clinical Study Discussion and Conclusion

The study met its primary endpoint, demonstrating a statistically significant association between the adjunctive prediction using CHLOE BLAST and actual blastocyst outcomes for Good/Fair embryos, as indicated by an Odds Ratio (OR) greater than 1.

The OR calculated for Good/Fair morphology embryos considered for selection, increased with the addition of CHLOE. Further analysis by maternal Age and BMI categories and by site demonstrated that the OR remained greater than 1 across all subgroups (with only one BMI category and one age category having a lower bound of the CI lower than 1).

For all panelists, CHLOE's adjunct prediction showed higher subject-level sensitivity compared to traditional morphology.

The top two embryos analysis demonstrated that CHLOE was predictive among embryos considered promising by traditional criteria.

The clinical performance data demonstrate that CHLOE BLAST meets the Special Controls for Embryo Image Assessment System, Assisted Reproduction.

10. Conclusion

The results of the performance testing described above demonstrate that CHLOE BLAST is as safe and effective as the predicate device and supports a determination of substantial equivalence.