%xcdtcdy - Calculate Study Day from ISO 8601 Dates

Overview

The `%xcdtcdy` macro calculates the study day (--DY) variable from two SDTM character date variables in ISO 8601 format (--DTC). This is commonly used in clinical trials to calculate the number of days between a reference date (usually first study drug exposure) and another event date.

Version Information

- **Version**: 1.0
- **Last Updated**: 19FEB2021
- **Author(s)**: Atorus Research

Dependencies

- SAS version: SAS 9.4 V9
- Input dates must be in ISO 8601 format (YYYY-MM-DD)
- No other macro dependencies

Parameters

Parameter	Required	Default	Description
dtcdate	Yes	-	Name of the character --DTC variable to calculate --DY for
refdate	Yes	-	Name of the reference character date variable

Return Values/Output

The macro creates:

- A numeric --DY variable with the same prefix as the input dtcdate variable (e.g., if dtcdate=AESTDTC, creates AESTDY)
- Error messages in the log for invalid date formats or missing parameters

Processing Details

1. Input Validation:
    - Checks if both required parameters are provided
    - Validates that dates don't contain invalid characters (only 'T' is allowed)
    - Ensures both dates have at least 10 characters (full date portion)
2. Date Processing:
    - Extracts the first 10 characters (date portion) from both dates
    - Converts ISO 8601 dates to SAS dates using e8601da. format
    - Calculates study day using the formula: DY = date - refdate + (date >= refdate)

3. Error Handling:
    - Outputs error messages for missing parameters
    - Outputs error messages for invalid date characters
    - Skips processing if dates are incomplete

Examples

Basic Usage

```
%xcdtcdy(exstdtc, rfstdtc);
```

Lab Data Example

```
%xcdtcdy(lbdtc, rfstdtc);
```

Multiple Calls Example

```
data ae;
    set ae;
    %xcdtcdy(aestdtc, rfstdtc);
    %xcdtcdy(aeendtc, rfstdtc);
run;
```

Common Issues and Solutions

Issue	Solution
Invalid characters in dates	Remove any alphabetic characters except 'T' from the dates
Missing study days	Ensure both dates have at least the date portion (YYYY-MM-DD)
Incorrect day calculation	Verify that the reference date is the correct anchor date

Notes and Limitations

- Only processes dates with at least 10 characters (full date portion)
- Ignores time components if present
- Study day 1 is the day of the reference date
- Positive study days include the reference date
- Does not handle partial dates

See Also

- `%xcdtc2dt`: For converting ISO dates to SAS dates/times

- `%xuepoch`: Derives the EPOCH variable for SDTM datasets
- `%xuvisit`: Visit and timing derivations

Change Log

Version	Date	Author	Changes
1.0	19FEB2021	Atorus Research	Initial version