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ORIGINAL ARTICLE

SOFTWARE IMAGE TOOL 3.0 AS AN INSTRUMENT FOR MEASURING WOUNDS
SOFTWARE *IMAGE TOOL* 3.0 COMO INSTRUMENTO PARA MENSURAÇÃO DE FERIDAS
SOFTWARE IMAGE TOOL 3.0 COMO INSTRUMENTO PARA LA MEDICIÓN DE HERIDAS

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ABSTRACT
Objective: to describe the use of the software UTHSCSA *Image Tool* 3.0 to measure wounds. *Method:* informative article for using the software Image Tool 3.0 which is easy to use and a free download online. To measure the wound the only items needed are; ruler, digital camera and computer with the Image Tool 3.0 software installed. *Results:* to use the program, one should photograph the concomitant injury while using a ruler next to the injured area so that the software can be calibrated to centimeters. By circumventing the wound with a specific tool, the program displays the total area result in cm². *Conclusion:* it is believed that the Image Tool 3.0 is an instrument that facilitates wound measurement practice, including safety, convenience, speed and reliability of this process, with the possibility of comparisons between the measurements obtained, which will assist in therapy to be used. *Descriptors:* software; evaluation; wounds and injuries.

RESUMO
Objetivo: descrever a utilização do software UTHSCSA *Image Tool* 3.0 para mensuração de feridas. *Método:* estudo descritivo, do tipo informativo, sobre a utilização do Programa *Image Tool* 3.0 que é de fácil manuseio e pode ser acessado gratuitamente pela internet. Para medir a área da ferida são necessários apenas régua, máquina fotográfica digital e computador com o referido software instalado. *Resultados:* para a utilização do Programa, deve-se fotografar a lesão concomitante ao uso de uma régua próximo à área ferida para que o software possa ser calibrado para centímetros. Ao contornar a lesão com a ferramenta específica, o programa apresenta o resultado da área total em cm². *Conclusão:* acredita-se que o *Image Tool* 3.0 seja um instrumento que facilita a prática da mensuração da ferida, incluindo segurança, praticidade, rapidez e confiabilidade desse processo, com a possibilidade de comparações entre as medidas obtidas, o que irá auxiliar na conduta terapêutica a ser tomada. *Descritores:* software; avaliação; ferimentos e lesões.

RESUMEN
Objetivo: describir el uso del software UTHSCSA *Image Tool* 3.0 para medir las heridas. *Método:* éste es un artículo informativo la utilización del programa Image Tool 3.0 que es gratuito en línea y fácil de manejar. Para medir el área de la herida se necesitan solamente una regla, una cámara digital y el computador con el software *Image Tool* 3.0 instalado. *Resultados:* para usar el programa, se debe fotografiar la lesión a la utilización concomitante de una regula al lado del área lesionada para que el software puede ser calibrado en centímetros. Alrededor de la lesión con un instrumento específico, el programa presenta los resultados de la superficie total en cm². *Conclusión:* se cree que el programa *Image Tool* 3.0 es un instrumento que facilita la práctica de la medición de la herida, incluida la seguridad, comodidad, rapidez y fiabilidad de este proceso, con la posibilidad de comparación entre las mediciones obtenidas, lo que ayudará en la terapéutica que deban tomarse. *Descriptores:* programas informáticos; evaluación; heridas e lesiones.

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INTRODUCTION

The systematic evaluation of the wound provides a basis for the implementation and changes or maintenance of the treatment plan with the aim of ensuring that an effective treatment is administered to cure the wound.[1]

So that nurses can develop and implement treatment for injured patients, initially it is necessary to holistically evaluate the client, as well as the wound´s characteristics.

Evaluation of the wound should include location, measurement of the wound, exudate characteristics, tissue color and odor, so that the daily description can be followed by all the professionals involved in the monitoring the patient.[2-3] In addition to these factors, it is also necessary to assess the patient´s, which will help in the early diagnosis of infection and the treatment for relief intervention.[4]

Wound size monitoring is one of the main items of assessment because it provides objective information for continuing or changing the type of treatment, and may justify the cost and help in communication with the team and patient. There are several approaches for the measurement of injuries, namely:[5-6]

✓ Ruler: used to measure the region of greater length perpendicular to the larger width, in centimeters. However, this method requires subjective interpretation, it is necessary that the same professional performs the measurement so that the points are always the same. In addition, the length and width points of the wound cannot change in this method, but new areas of epithelization may develop in the bed of the wound which cannot be counted. Researchers also make use of sterile string for wounds with hyper-granulation or circulating the body member, by transferring this material to the ruler.[7]

The depth of the ulcer can be checked with a tweezer, swab or thin urethral probe, which should be inserted into deepest point of the ulcer; the quantity of material required to fill the cavity can also recorded.[8]

✓ Acetate: consists in tracing the shape of ulcer in transparent material (acetate paper) in two layers, being that the layer which has contact is discarded. The area may be calculated by placing the overlay on top of graph paper and counting the number of whole squares. This method also requires subjective interpretation, since each square within the border of the margin of the wound should be interpreted for its inclusion or not;

✓ Digital Planimetry: Place the acetate with the drawing of the wound in a digital device, which depicts the limits of the wound, using a pen, making a new drawing superimposed on the previous, and an underlying sensor calculates the area of the wound. This method is more objective, precise, has high inter-observer agreement and intra-observer reliability, but also depends on the accuracy in the initial drawing of the wound.

✓ Photo: provides visual evidence of the appearance of an ulcer. However, does not detect it´s depth. This method requires repetition of the procedure, at regular intervals, under the same angle, light and constant focal length, allowing future comparisons;

Given the importance of measuring the wound area and the difficulty experienced in practice to obtain objective measurements, reliable real size of the wound, shows the software UTHSCSA Image Tool 3.0 as a tool to facilitate the measurement of the wound, including safety, speed and reliability of this process, since will be needed just ruler, digital camera and computer with the above software installed, available free of charge on the site http://ddsdx.uthscsa.edu/dig/download.html [9]

The program was developed at the University of Texas for Microsoft Windows. It has functions for displaying, editing, analyzing, processing, saving and printing images in grayscale or color. In the presentation, the program displays a splash screen that has several tools and their functions.

Given the importance of this instrument in the process of professionals who work in caring for patients with wounds; this study is to provide theoretical knowledge on the steps for using the program.

♦ **Utilization of the software UTHSCSA *Image Tool* 3.0**

Next the program´s use will be described step-by-step. It is noteworthy that for this explanation, the article has been previously tested with eighteen undergraduate nursing students in order to identify whether the

understanding with only this material was sufficient. Without prior instruction, all managed to use the instrument properly only with this article. Following the first step, one must choose a picture by clicking on the button in the upper left corner with the option "open image" (Figure 01).
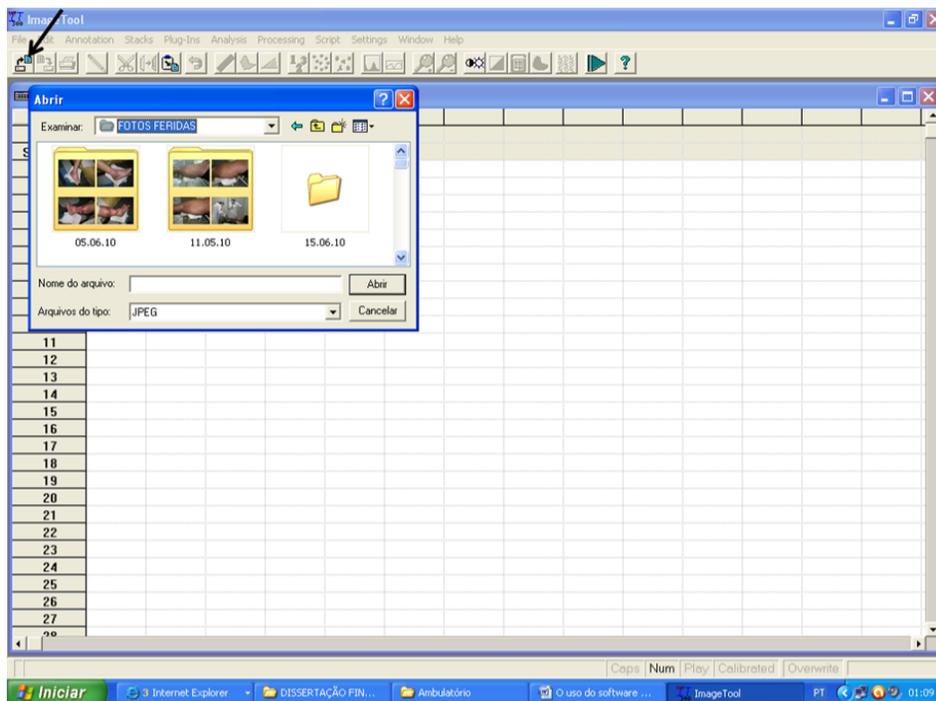

Figure 1. Search and image choice.

After selecting the option, another window will open to the search for the folder where the photograph to be analyzed has been placed (Figure 01). The program contains a number of file formats, including BMP, PCX, TIF, GIF and JPEG.

After selecting the photograph, a third window will open with the selected image. If necessary, one can use the tool "Zoom in" and "Zoom out" to adjust the wound area to the size of the window (Figure 02). It is worth mentioning that all photography must have a ruler near the lesion, which will ensure that the program makes a reliable reading for the size of the area, independent of the distance used between the machine and the wound.

Figure 2. Image Adjustment.

After adjusting the image, one must calibrate the program so that he can recognize which assessment area measurement will be used. At this moment, one should choose the option "settings" followed by, "calibrate spatial measurements".

Immediately afterwards a pencil will appear, which should be used to draw a straight line equivalent to one centimeter on the ruler so that the program use this measurement for the area (Figure 03).

Figure 3. Centimeter mark on the ruler.

Figure 4. Choice of centimeter as a measurement.

When tracing between the distances, there will be another window, where the option of centimeters should be chosen, and on the item "length" put the number 1 (Figure 04). To measure the area of the wound, the option "analysis" on the toolbar should be noted. Just below, there is a blue ruler and next to it, a figure that represents the i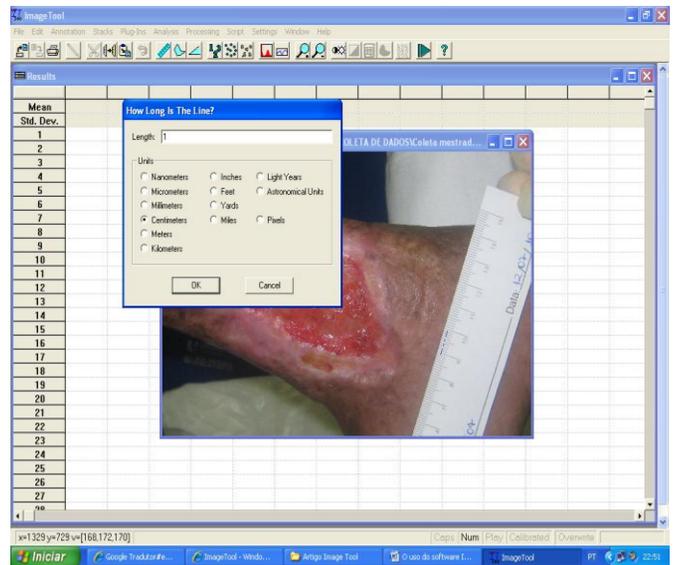tem "area" in the toolbar - click on it or use the hotkey on the keyboard "Ctrl + A". At that time, a new pencil will appear to trace the edges of the wound. One should, carefully trace the contour by clicking and releasing the mouse button. The final joining of the contour, must be given two quick clicks; the contour will be flashing and the area of the wound will appear in the window with the "results" displayed in cm 2 (Figure 05).

Figure 5. Result of wound size.

In this example, it can be observed that the wound area size is equivalent to 21.77cm^2.

FINAL CONSIDERATIONS

This tool can be used with safety in the evaluation, ensuring reliability and speed in patients who require fast handling due to hemodynamic instability, practicality and possibility of comparisons between the measurements obtained, which will assist in the therapeutic approach to be taken.

REFERENCES

1. McNees P. Skin and wound assessment and care in oncology. Semin oncol nurs [Internet]. 2006 Aug [cited 2012 Mar 01]; 22(3): 130-43. Available from: http://www.seminarsoncologynursing.com/article/S0749-2081(06)00057-X/abstract

2. Aron S, Gamba MA. Preparo do leito da ferida e a história do TIME. Rev Estima [Internet]. 2009 Out/Nov/Dec [cited 2012 Mar 01]; 7(4): 20-4. Available from: http://www.revistaestima.com.br/index.php?

option=com_content&view=article&id=109%3A atualizacao-1&catid=13%3Aedicao-vol-74&Itemid=84&lang=pt

3. World Union Of Wound Healing Societies. Principles of best practice: Wound exudate and the role of dressings. A consensus document. London: MEP; 2007. [cited 2011 03 Dec]. Available from:

http://www.wuwhs.org/datas/2_1/4/consens us_exudate_ENG_FINAL.pdf

4. Hofman D. Practical steps to address pain in wound care. Br j nurs [Internet]. 2000 [cited 2012 Mar 03]; 15: 10-4. Supplement 21. Available from:

http://www.refdoc.fr/Detailnotice?cpsidt=183 04766&traduire=en

5. Langemo D, Anderson J, Hanson D, Hunter S, Thompson P. Measuring wound length, width, and area: which technique? Adv skin wound care [Internet]. 2008 Jan [cited 2012 Mar 04]; 21 (1): 42-5. Available from: http://www.nursingcenter.com/pdf.asp?AID=7 61963

6. Gethin GT. Wound Measurement: the contribution to practice. EWMA Journal [Internet]. 2007 Jan [cited 2012 Mar 03]; 7(1):26-8. Available from: http://ewma.org/fileadmin/user_upload/EW MA/pdf/journals/EWMA_Journal_Vol_7_No_1. pdf

7. Quelemente BA, Morita ABPS, Balbi AT. Utilização da solução hipertônica de cloreto de sódio em ferida hipergranulada. Rev enferm UFPE on line [Internet]. 2009 Apr-June [cited 2012 Abr 12];3(2):317-23. Available from: http://www.ufpe.br/revistaenfermagem/inde x.php/revista/article/view/297/pdf_871

8. Dealey C. Cuidando de feridas: um guia para as enfermeiras. 3 ed. São Paulo: Atheneu; 2008.

9. UTHSCSA ImageTool Version 3.0 Final [Internet]. [cited 2011 03 Dec]. Available from: http://ddsdx.uthscsa.edu/dig/download.html

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