There is an old saying:

Behind every successful man, there is a woman.
Basic Requirements for Success

I say:

Behind every successful Dentist,

there is a knowledgeable Dental Technician
Dentists and technicians: Dependent partners

Objective: To continually improve professional services

Key Elements of a sustainable relationship:

- Mutual respect
- Mutual frustration
- Mutual accusations
- Mutual blame
- Mutual admiration
- Mutual understanding
Dentists and technicians: Dependent partners

Objective: To continually improve professional services:

Mutual understanding

Dental clinicians should understand laboratory restrictions
Dental technicians should appreciate clinical restrictions

compromise

technical restrictions

biologic & esthetic factors
Working relationships between dentists & laboratories.

Dentists should:

- Provide signed, written, detained instructions explaining the work to be done and the materials to be used.
- Provide accurate impressions, casts, occlusal records/mountings.
- Identify margins, post-dam, relief and/or prosthetic design.
- Provide a shade description, photograph or drawing of the shade combinations to achieve the desired results.
- Provide a verbal/written approval for the laboratory to proceed with the fabrication of the prosthesis, if notified by the laboratory that a submitted case may have questionable areas.
- Retain a copy of the written instructions (may be required by law).
- Follow appropriate laboratory infection control protocol.
Survey: 488 Dental Laboratories in 5 Midwestern States

- Lab prescription including specific materials to be used for prostheses → Less than 50%

- Laboratories reporting usage of semi-adjustable / adjustable articulators by their clients (dentists) for FDP cases. → Less than 7%

The biggest problem for labs: Poor quality impressions laboratories

- Laboratories reported that when insufficient or incomplete impressions are received, they are usually instructed “to fake the margins”
How do the clinicians communicate with dental technicians when working on a case?

What are the means through which this communication takes place?
Instruments of Communication

1) Stone Models → The only 3D tool of communication
   a) Pre-operative Models
   b) Stone Model of Diagnostic Wax-up
   c) Stone Model of Provisional Prostheses
   d) Working Models (Master casts)

Models transfer an abundance of information to the technician

1) **Visualization** of masticatory function
2) **Contour, texture, location** of pre-existing restorations/dentition
3) **Evidence of parafunctions**
4) **Highlighting the occlusal disharmony** for the technicians
5) **Helping patients** comprehend the nature of the problem and realistically anticipate the end result of the treatment.
Instruments of Communication

Teeth are 3-dimensional:
It is difficult to elucidate the desired contours for the technician.

Diagnostic wax-up models can be utilized for:
- Fabrication of provisional prostheses
- Fabrication of definitive prostheses

Provisional prostheses as a guide for definitive prostheses
Provisional prostheses as a guide for definite prostheses
2) **Impressions** → A bridge between oral cavity to laboratory

- Linking dentist, patient and technician
- Evaluation of impression before sending it to the lab
  - absence of voids / defects (specially at the margins)
  - close reproduction of prepared teeth

1) Voids in margins: **Impression must be discarded**

2) An intact, uninterrupted cuff of impression material should be present beyond every margin.
2) Impressions:

Questions to be answered before sending an impression to the lab.

- Has the material been properly mixed?
- Is there an area where the tray shows through?
- Are there any voids, folds, or creases?
2) Impressions:

Questions to be answered before sending an impression to the lab.

➢ Has the impression material separated from the tray?

➢ Is there an even, uninterrupted extension of impression material beyond the margins of the prepared teeth?
Clinician’s prescription is sent to the lab along with the impression:

“Inspect the poured model as quickly as possible and call the dentist immediately if the model is unclear and a new impression or change of prep is needed!!”
2) Impressions:

General Rule of Thumb

If the lab wishes a new impression or re-prep due to discrepancies, and the dentist refuses: 
remakes are the dentists’ responsibility

If the lab accepts an impression of the prepared teeth as it is: 
any remake will be the lab’s financial responsibility
Properly prepared tooth with an accurate impression

Unclear margins and/or inaccurate impression

Outlining the margin may be left to the technician

Outlining the margin has to be done by the dentist
3) Shade Guides:

Providing a vehicle for communication of a color reference point between the clinician and the technician/ceramist

- Shade selection: Subjective, difficult to achieve consistency
- Variations even exist within the same individual teeth
- To achieve the conformity between the clinic and the lab, it is required that the clinician and the technician use the same shading systems.
Popular Shade Guides:

Vitapan Classical (Lumin Vacuum) → 50 years

➢ Most frequently used and universally used shade guide:

Shades: A1 to D4 (Based on denture teeth shades)

Hue: (A, B, C, D)
- A: Orange/White
- B: Yellow
- C: Yellow/Grey
- D: Orange/Brown

Value/Chroma: (1, 2, 3, 4)
- 1: Lighter with lower color intensity
- 4: Darker with higher color intensity
Popular Shade Guides:

**Vitapan 3D-Master**

- Introduced more recently
- Representing vital tooth shades more accurately
- Incorporating cervical and incisal shades (more realistic)

Shade categories ➔ (1, 2, 3, 4, 5)

Categories based on value (same brightness)

Chroma increases from top to bottom

Hues: (1, 2, 3, 4)

L (Light): For a yellow hue
M (Medium): For a yellow/red hue
R (Red): For a red hue
4) Chromatic/shade Mapping: Diagrams

- Teeth are not monochromic: An spectrum of shades
- Ranging from a simple sketch to complex drawings
- Information such as:
  - Translucency patterns, hypocalcifications, crazing, opaque areas, dentin liners, inter-color contrasts
5) Photographs → Living in digital era, virtual instruments

- Empowering dentists and lab technicians visually
- Relationship of provisional /set-up to the lip contour
- Shade matching:
  - Visualizing the surface texture and lustre
  - Analyzing shades for chromatic mapping
  - Relative shade analysis with the shade tabs
  - Characterisations: cracks, stains, mamelons

Hypocalcification
6) Interocclusal Records: Last but not least

- One of the most vital factors determining the treatment’s success

- Correct translation of the two plane of occlusion is fundamental to achievement of an optimal functional and esthetic result.
6) Interocclusal Records:

Five criteria for accuracy of an interocclusal bite record:

- **Bite record must not cause any movement of teeth/soft tissue.**
- **Accuracy of the record should be verifiable in the mouth.**
- **Accuracy of the record should be verifiable in the dental cast.**
- **The record must fit dental casts as accurately as it fits the mouth.**
- **No distortion should happen before being transferred to the lab.**
Dentists voicing their complaints:

I. *Occlusion* too high or too light
II. Proximal *contacts* too tight or too loose
III. *Master cast* abuse
IV. *Over-polishing* of margins
V. *Marginal discrepancies*  
VI. *Over-contouring* at margins
VII. *Aesthetics* off

* In these cases, the undesired results may be directly associated to improper and inaccurate techniques performed by the dentist.
Technicians voicing their complaints:

I. Not enough reduction/clearance
II. Inaccurate impression
III. Not enough information on the prescription
IV. Illegible writing
V. Too much information on the prescription
VI. Inaccurate opposing models
VII. Lack of mounting records

If these issues are not solved, they turn into the dentist’s complaints once the prosthesis is delivered.
Dental Materials and Prosthesis Design Selection
Factors to be considered in choosing the right material:

a) Longevity
b) Esthetics
c) Preparation limitations
d) Occlusal requirements
e) Laboratory limitations
Material selection for fixed prosthodontics

All metal prostheses:
Gold alloys, Base metals

Conservative preps, less abrasive than ceramics, fracture resistance, not esthetics, recommended for bruxers.
Material selection for fixed prosthodontics

Metal Ceramic prostheses
Precious / non-precious alloys + Different types of ceramics

Incorporating esthetics of ceramics with the mechanical properties of a metal coping
Material selection for fixed prosthodontics

All Ceramic prostheses
Feldspathic, glass infiltrated, alumina, zirconia

- Varied mechanical properties based on composition
- Much harder than natural teeth
- Parafunction: fracture & wear of opposing teeth
the clinician should instruct the technician and should address the design of the pontic in the lab prescription

<table>
<thead>
<tr>
<th>Pontic Designs for Fixed Dental Prostheses</th>
<th>Ridge lap</th>
<th>Modified ridge lap</th>
<th>Stein</th>
<th>Sanitary</th>
<th>Ovate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unacceptable: Impossible to clean</td>
<td>Commonly used, Hard to clean, Decent esthetics</td>
<td>Designed for thin ridge</td>
<td>Easy to clean, and Worst esthetics</td>
<td>functional &amp; esthetic, but, requires Surgery</td>
<td></td>
</tr>
</tbody>
</table>
• What restoration to be done
• Choice of materials
• Occlusion/Occlusal scheme
• Shade/Prep shade
• Is patient a bruxer
• Pertinent medical history
• Pre-operative models
• Models of temporaries
• Digital photography
• When would you like it back
# Laboratory Prescription

<table>
<thead>
<tr>
<th>Patient</th>
<th>M □</th>
<th>F □</th>
<th>Age</th>
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<table>
<thead>
<tr>
<th>Shade</th>
<th>MARGIN</th>
<th>ADAPTATION</th>
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<tbody>
<tr>
<td></td>
<td>1. Exactly to Finish Line</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>2. Slight Overextension</td>
<td>□</td>
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</table>

<table>
<thead>
<tr>
<th>Mould</th>
<th>LABIAL MARGIN</th>
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<tbody>
<tr>
<td></td>
<td>□ Collar</td>
</tr>
<tr>
<td></td>
<td>□ Butt Margin</td>
</tr>
<tr>
<td></td>
<td>□ To Margin</td>
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<table>
<thead>
<tr>
<th>Precious</th>
<th>Semi Precious</th>
<th>Non Precious</th>
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<table>
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<tr>
<th>Pontic Design</th>
<th>Semi Hygienic</th>
<th>Cone</th>
<th>Ridgelap</th>
<th>Hygienic</th>
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<thead>
<tr>
<th>Contacts</th>
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</thead>
<tbody>
<tr>
<td>1. Broad - Large</td>
</tr>
<tr>
<td>2. Normal</td>
</tr>
<tr>
<td>3. Point</td>
</tr>
</tbody>
</table>

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[Images of various dental prosthetics and crowns are shown alongside the prescription form, highlighting different aspects such as shade, mould, preciousness, margin, and pontic design.]
Digital Revolution

Virtual impression, virtual models, virtual design
Thank you